

Municipal Journal

And Engineer

VOLUME XXVII.

NEW YORK, AUGUST 4, 1909.

No 5.



CENTRAL FIRE STATION AND EQUIPMENT

LANSING, a city of about 35,000, is built up almost equally on the four sides of the business center. Toward the outskirts in two directions are manufacturing establishments, and residences are on all sides. There is a large central fire station in the heart of the business district. At present there are three sub-stations at three sides of the square making up the city, and as soon as possible a fourth station will be built which will complete the scheme mapped out. A modern Gamewell fire alarm system with storage batteries is in use. This has sixty boxes connected on six separate circuits. Ten miles of the wiring is in underground conduits, which is a much larger percentage than many larger cities can show. Besides this regular alarm system arrangements are made for receiving and transmitting telephone alarms. Furthermore, all the fire stations are connected by a private telephone system which makes them independent of central.

The equipment of the central station comprises one Chief's automobile, built by the Oldsmobile Company, one Webb motor fire engine, one horse-drawn chemical, one horse-drawn truck and one reserve horse-drawn hose wagon loaded with 1,000 feet of hose.

The Chief's wagon is a four-cylinder forty-horse-power Oldsmobile which carries four men. This is equipped with two hand chemicals and axes, and responds to every alarm. It has $3\frac{1}{2}$ and 4-inch Fisk tires, and two detachable rims with inflated

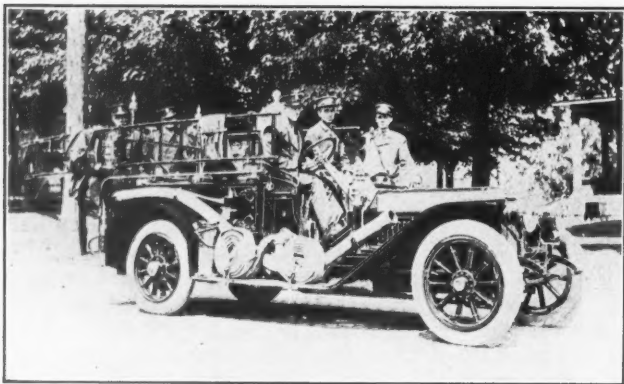
tires are carried. The acetylene headlights are arranged with an ingenious electrical device so that they can be lighted from the seat. A storage battery is used for electrical ignition.

The Webb motor fire engine and hose wagon has a six-cylinder, sixty-horse-power engine. The same engine both propels the vehicle and operates the pump, which is a second size and throws 700 gallons of water per minute under a pressure of 200 pounds. The tires used are $5\frac{1}{2}$ -inch Goodrich tires with Daly tread. These have been in service nine months, including the winter, and have not yet been punctured. Both storage battery and magneto are used for ignition. Electric headlights are supplied with current from the storage battery. Six men are carried on this apparatus. The fire equipment consists of soft hydrant suction hose, 24 feet of hard suction hose, 1,000 feet of $2\frac{1}{2}$ -inch fire hose, one 26-foot extension ladder, one roof ladder, one plaster hook, two axes, two Babcock hand chemicals and one cellar pipe; besides nozzles, spanners, lanterns, etc.

The chemical wagon carries two 60-gallon tanks and 200 feet of chemical hose.

The hook and ladder truck carries one 65-foot hand extension ladder, one 35-foot wall ladder, one 30-foot wall ladder, roof ladders, deluge set, life net, smoke helmet, etc.

The central station has a complement of fifteen men, including the Chief. It contains a large, airy and light dormitory



LANSING MOTOR FIRE ENGINE

with beds for fourteen men. Each man has a good sized locker. Bath tub and shower baths are provided. A large gymnasium room contains bars, horse, ladders, weights, etc. A billiard table and other games are also furnished. Beside these rooms there is a parlor and the Chief's office.

Each of the three sub-stations has identical equipment, consisting of a two-horse combination hose and chemical wagon. This carries 1,000 feet of $2\frac{1}{2}$ -inch fire hose, one 50-gallon chemical tank and 150 feet of chemical hose, one 20-foot extension ladder, one 14-foot roof ladder, axes, nozzles, lanterns, etc. There is also a reserve hose wagon with 1,000 feet of hose on it. At No. 2 station there are five men, and at Nos. 3 and 4 there are four men. Each of the sub-stations is equipped with large and convenient dormitories with good baths.

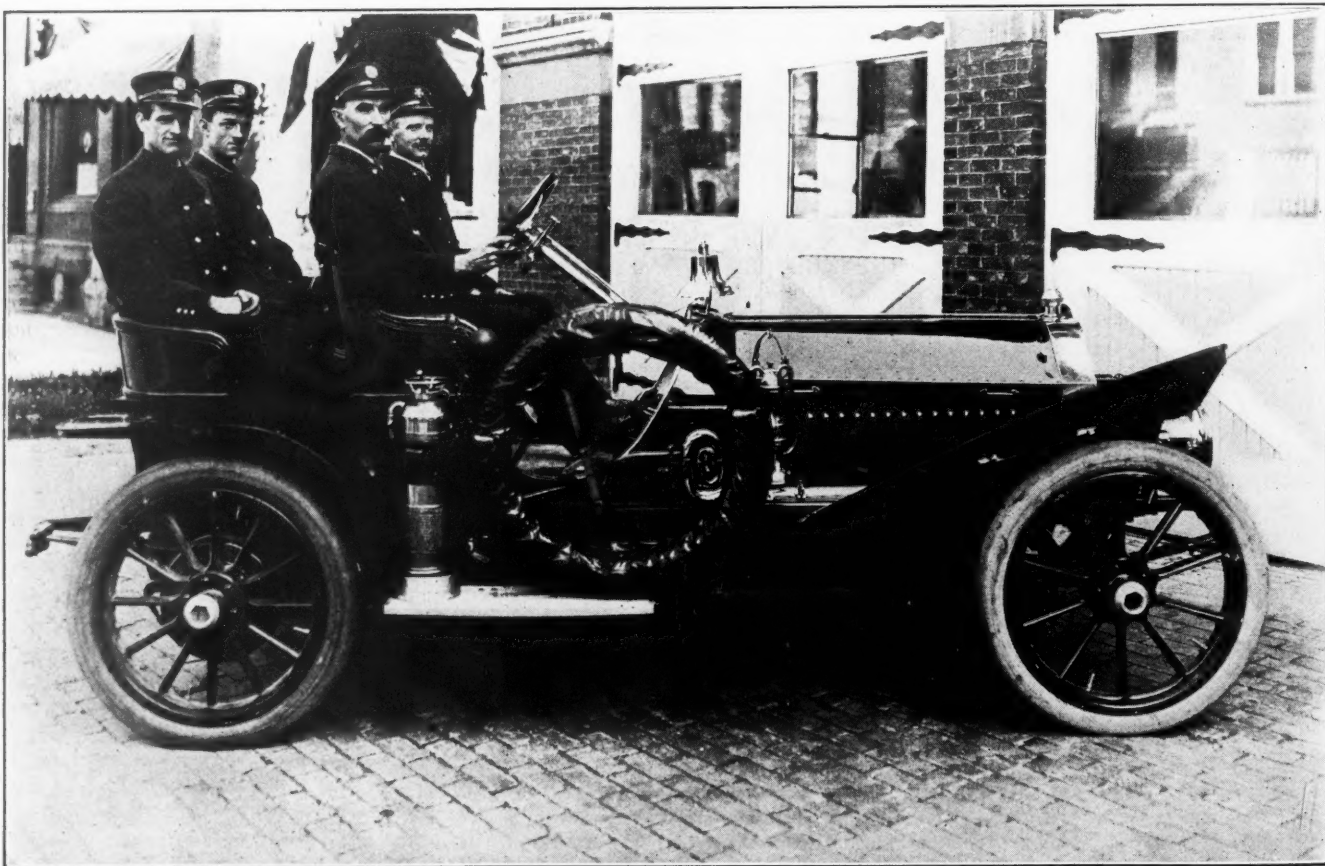
The department now owns about 6,500 feet of fire hose and will soon buy 1,000 feet more. The Chief would like to buy 3,000 feet, making a total of about 10,000 feet, but his appropriation will not allow it. There are many makes of hose used, among them, Paragon, Manhattan Rubber Company, Empire Rubber Company and Fabric Fire Hose made by the New York Belting & Packing Company. At the central station a

rough sort of school is conducted to educate the men in the handling of apparatus and the scaling of buildings. One of the illustrations shows the structure used.

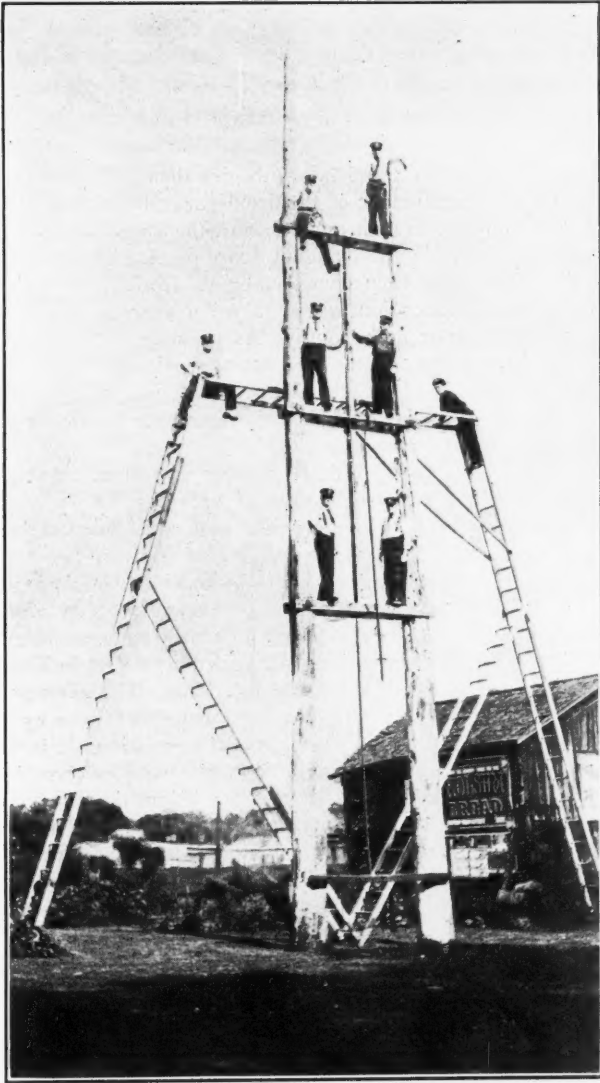
There are five horses at the central station; one extra, and two in each of the substations. The annual cost for each of these horses, including feed, bedding, supplies, veterinary and shoeing, is about \$125. The shoeing bill is greatly reduced by having the horses all shod at the central station by one of the men. When a horse needs shoeing his place is taken by the reserve horse while he is taken to the central station.

Like a good many other departments, the Lansing Fire Department seems underpaid considering the confinement of the work and the hazard run. The Chief gets \$1,350 per year, assistant chief \$75 a month, captains \$70 per month, head chauffeur \$70 per month, blacksmith \$70 per month, electrician \$70 per month, and men \$55 a month for first year, \$60 the second and \$65 from then on.

The present Chief of the department, Mr. Hugo R. Delfs, has been connected with the department for nineteen years and has been Chief for nearly six years. Since he became Chief the department has been changed from the semi-paid and call men to the full paid type. Chief Delfs is an advocate of everything modern in fire apparatus, which includes an entire automobile department. His main reason is that such a department would be cheaper in first cost and in operation than is the case with horse-drawn apparatus. His present automobile engine cost \$7,000, which is no more than the same size steam fire engine and horse wagon would cost. It does away with five horses, with their attendant bills, and this reduces the space necessary to house the apparatus. It also reduces the number of men needed, as only six are required in this company, against nine in the older style. Such apparatus can respond much more quickly than horse drawn, as is evidenced by the fact that his engine has traveled fourteen blocks to a fire and reached it before a horse-drawn company traveling six blocks. Chief Delfs hopes eventually to have a 700-gallon auto fire engine in each of his four substations and a 1,000-gallon engine of the same character in the central station. At present he is having a new



CHIEF HUGO R. DELFS IN HIS CAR



TRAINING SCAFFOLD, LANSING FIRE DEPARTMENT

auto chemical wagon built and his present chemical tanks will be transferred to that. This will be a six-cylinder, 60-horse-power car and will carry four men. It will serve as a sort of auxiliary apparatus and will respond to all alarms. As soon as the finances of the department permit he hopes to get a satisfactory motor aerial truck.

Some figures on the automobile apparatus now in service in the department may be of interest. During June the Chief's car went 18 miles in response to fire alarms, besides performing a great deal of other service in connection with the department, and the motor engine went 16 miles in response to alarms; responding to 11 alarms and making eight tests and practice runs. At fires the engine pumped one hour and 24 minutes and at test for 30 minutes. For this work the engine used 29 gallons of gasoline, costing \$3.19, and the Chief's car used 53 gallons of gasoline, costing \$5.83, and one gallon of oil. It is interesting to note that this engine has pumped for over four hours continuously. The engine has been in service since Dec. 1, 1908, and the only outlay for repairs has been for a new storage battery and three spark plugs, besides \$1.50 for tire chain repairs. It has responded to alarms in all kinds of weather and easily gone through eight to ten inches of snow. Three men in the department have been trained to drive the machine.

Mr. Edward L. Smith is president of the Lansing department; Mr. Peter F. Gray, clerk; Mr. Hugo R. Delfs, Chief, and Mr. G. B. Andrews, Assistant Chief. The Fire Commissioners are: Messrs. Edward L. Smith, James P. Edmonds, Hiram C. Hedges, Lewis E. Imes, J. E. Warner and John Bohnet.

AUTOMOBILE FIRE APPARATUS

Reliability and Durability—Experiences in Vancouver, Springfield, and Minneapolis—Speed in Reaching Fires

Abstract of a paper read before the Minnesota State Firemen's Association by Captain John P. Barrett of Minneapolis.

THE real value of automobile equipment depends largely upon its reliability and durability. When responding to alarms the driver of an auto has much better control over his machine than the driver of a horse-drawn apparatus, thereby reducing the danger of accidents and collisions to a minimum. In Vancouver, during last year's service, the combination chemical and hose (double 60-gallon chemical and carrying 1,500 feet of 2½-inch hose) answered 382 alarms and covered 750 miles without failure to respond to a single alarm. The cost of maintenance was 60 per cent cheaper than that of the former horse-drawn apparatus. The satisfaction given in this city is shown by the fact that two more auto fire wagons were placed in service in April of this year. The two auxiliary squads and combination hose and chemical wagons of Springfield, Mass., answered 286 alarms last year, with but one failure to start, which failure was due to some malicious person having crossed the terminal wires in the batteries, which caused a delay of three minutes. The auto car of Chief J. R. Canterbury, of the Minneapolis Fire Department, was placed in service July 15th, 1908, and during the next ten months answered over 300 alarms without a single failure to start. During the very heavy snow-storms of last winter in Minneapolis steam railways and street car lines were unable to operate successfully, but the auto invariably did its work more successfully than the horse. The expense of this service for oil was \$6 per month, whereas it would have cost \$35 to feed the two horses which would have been required to do the same work. In consequence of the success of this car the city purchased a police patrol auto wagon in March of this year.

One of the advantages of the auto wagons is the speed with which the smaller ones can reach a fire with chemical extinguishers. Statistics show that 80 per cent of all fires can be and are put out by the use of chemicals with a nominal loss only; an additional 10 per cent are put out with water at a nominal loss only, and the remaining 10 per cent are extinguished by water only after great losses have occurred. The losses from this last 10 per cent. amounted to over \$250,000,000 in 1908 in the whole United States. Firemen realize that greater speed in reaching the fire would increase the first 80 per cent by decreasing each of the other classes of fires in which losses occur.

Another advantage of the auto is that with horse-drawn apparatus the drivers must remain with the horses and are of no service at the fire, while the auto driver can leave the machine and engage in active duty.

Possibly the smaller cities, those from 500 to 10,000 population, can derive the greatest benefit from the use of automobiles, since most of these cannot afford an expensive steamer outfit; but even the larger cities realize the economy possible. As a comparison take a combination chemical and hose wagon with two horses, harness and equipment costing \$3,000, which is a moderate estimate. To feed and care for the horses will cost about \$300 a year. Shoeing and depreciation in the value of the horses would add considerably to this. In contrast, the auto would need only a barrel of gasoline and a half barrel of engine oil. Eighteen or twenty miles an hour is ample speed for Fire Department service, and this is three or four times as fast as a horse will go for any considerable distance, but such speed is easily obtained by auto apparatus.

Captain Barrett gives the following as the relative costs of horse and auto apparatus:

The cost of horse-drawn apparatus is: One third-class steam fire engine, \$5,000; one combined chemical and hose wagon complete, \$2,500; five horses, \$265 each, complete harness and spid-ers complete, \$2,250—\$9,750; cost of engine house, \$6,000—total first cost, \$15,750.

The cost of automobile fire apparatus, with combined fire pumps, chemicals and hose would be \$9,000; add a one-story engine house, \$3,000; and the total first cost would be \$12,000—a saving in first cost of \$3,750.

The annual expenses of horse-drawn apparatus, including the keep of five horses, at \$20 per month each, would be \$1,200; the salaries, two drivers, an engineer, a fireman and six hose-men, would amount to \$8,060—total, \$9,260; while those of a piece of automobile apparatus would be as follows: Engineer and six hosemen, \$6,120; repairs, gasoline and oils, \$140—net saving, \$3,000; saving in first cost, \$3,750; saving in expense for a year, \$3,000—\$6,750.

Bonds to cover the cost of installation, bearing 5 per cent interest, can be retired in less than five years out of the saving from maintenance and appropriation.

FIREMEN PERFORM OTHER DUTIES

At Sherbrooke, P. Q., the firemen perform services other than those connected with the Fire Department. During 1908 these services included the following:

All duties in connection with the Health Department, such as investigation of complaints re-sanitary condition of premises with drains. Placarding of homes infected with contagious diseases, imparting instructions to be observed by the family. The removal of infected persons to the Civic Hospital, as well as others to the isolation rooms for disinfection.

The disinfection of the homes, with clothing, with general attention to all the requirements of the Health Department.

They have delivered 487 loads of wood to the poor. In many instances the wood had not only to be prepared, but carried upstairs into the apartment of the applicants who were quite unable to help themselves.

They have attended the Public Scale, and weighed 9,819 loads.

They have answered 166 calls with the ambulance, in the removal of the sick and injured to their homes or the hospital.

They have answered about 75 per cent of the 379 police calls with the patrol.

FIRE EQUIPMENT AND FIRE ALARMS

Data Concerning These From Fifty Cities—Amount of Equipment and Lengths of Hose Per Thousand Population
—Details of Fire Alarm Boxes

THE two tables presented herewith give data concerning certain parts of the equipment of the fire department of fifty cities; also concerning the fire alarm systems of the same cities. These data were collected by the National Board of Fire Underwriters, and the tables have been compiled by us from their records. Some of this information was obtained a year or more ago, some within three or four months. As a number of these cities, however, have added automobile apparatus within the past few months the table is not reliable in information as to automobile apparatus, but readers are referred to another article in this issue for such information.

In the last column is given the number of feet of regulation 2½-inch hose per 1,000 population of each city. Most of the hose other than 2½-inch is steamer hose and chemical hose, and was not included in the calculation of quantity per 1,000; several of the cities, however, possess considerable three-inch hose, Fall River, Mass., for instance, having 7,200 feet of this size. It is seen that the amount of hose per capita varies considerably in the different cities, ranging from 106 feet in Kansas City, Kan., to 890 feet in Marblehead, Mass. The average of all cities (found by dividing the total length of hose by the total population) is 220 feet per 1,000 of population. It is seen that, dividing the list of cities into two equal parts, of those having the smaller populations but five are below the average in hose length; while of the larger ones 15 are below the average. This is, of course, as might be expected, since population alone is not a fair gauge of the efficiency offered by hose length, but the area of the city and the spacing of the fire hydrants should

FIRE APPARATUS

CITY (Arranged in Order of Population)	Population	No. of Engines	No. of Hose Wagons	No. of Lad- der Trucks	No. of Chem- ical Engines	FEET OF HOSE		Feet of 2½-in. Hose per Thousand Population
						2½ inch	Other	
Marblehead, Mass.	7,580	2	7	2	..	6,800	..	890
Berlin, N. H.	13,000	1	3	1	1	5,000	200	385
Augusta, Me.	13,000	1	6	1	..	8,500	..	654
Central Falls, R. I.	20,300	1	5	1	..	7,250	150	357
Burlington, Vt.	22,000	1	3	1	1	7,400	250	336
Oswego, N. Y.	22,570	3	4	2	1	9,000	250	403
Newport, R. I.	25,039	5	12	2	..	16,250	1,000	650
Bangor, Me.	27,000	4	6	2	..	15,650	450	580
Fitchburg, Mass.	33,021	2	6	4	1	13,600	650	412
S. Omaha, Nebr.	35,000	..	4	..	..	5,850	..	200
Superior, Wis.	36,551	3	8	4	..	11,400	850	311
Springfield, Ill.	38,933	4	7	2	2	7,300	1,050	188
Binghamton, N. Y.	43,096	3	9	3	..	11,300	1,000	262
Pawtucket, R. I.	46,000	2	13	4	..	17,400	1,500	378
Brockton, Mass.	47,800	5	6	4	3	14,050	1,600	294
Altoona, Pa.	47,910	5	9	2	..	41,356	400	863
Lincoln, Nebr.	50,000	2	4	3	1	7,000	250	140
Norfolk, Va.	58,006	10	10	4	1	18,450	1,850	318
Utica, N. Y.	62,935	6	8	3	1	16,000	1,750	254
Duluth, Minn.	64,697	6	14	5	6	19,800	1,200	306
Des Moines, Ia.	75,696	..	14	5	3	24,750	2,450	327
Troy, N. Y.	76,271	11	18	4	..	26,500	1,350	347
Lawrence, Mass.	76,700	4	9	5	1	21,350	2,535	279
Lynn, Mass.	77,042	10	11	6	4	16,400	3,600	213
Schenectady, N. Y.	77,666	3	14	2	..	15,600	2,775	201
Bridgeport, Conn.	82,128	10	10	4	*1, 1	20,500	2,100	250
New Bedford, Mass.	90,300	8	12	4	..	17,900	650	198
Reading, Pa.	91,141	10	16	3	2	17,550	4,760	192
Camden, N. J.	92,548	7	9	3	2	14,900	1,300	161
Lowell, Mass.	94,889	6	14	4	2	19,950	1,500	210
Albany, N. Y.	97,806	11	19	4	..	23,900	..	244
Trenton, N. J.	98,000	9	7	..	2	15,000	4,500	153
Kansas City, Kan.	100,000	3	6	2	..	10,550	400	106
Hartford, Conn.	100,000	*2, 10	*1, 12	4	1	29,600	3,420	296
Dayton, O.	100,799	8	16	5	1	31,650	6,450	314
Fall River, Mass.	112,574	6	14	4	3	15,150	9,650	135
Paterson, N. J.	115,000	11	12	3	1	19,200	4,350	167
St. Joseph, Mo.	118,000	2	15	2	1	16,950	550	144
New Haven, Conn.	121,227	14	13	5	1	25,650	1,650	212
Syracuse, N. Y.	122,400	10	13	4	1	23,850	1,000	195
Omaha, Nebr.	124,167	5	14	6	2	23,500	850	190
Toledo, O.	159,980	13	19	10	..	31,050	3,300	194
Rochester, N. Y.	182,022	15	20	8	..	52,100	2,255	286
St. Paul, Minn.	197,023	18	21	8	3	52,900	1,550	269
Louisville, Ky.	240,000	23	25	7	..	38,450	6,000	160
Minneapolis, Minn.	261,974	22	29	9	8	48,780	9,630	186
Newark, N. J.	283,289	*1, 25	26	9	2	49,900	6,600	176
Cincinnati, O.	353,000	42	56	22	2	88,550	5,900	251
New Orleans, La.	360,000	33	39	11	*1, 12	26,680	6,087	741
Pittsburg, Pa.	520,322	46	57	18	4	106,700	15,950	307
Average of all cities	..	..	..	..	..	..	..	220

*Automobiles.

also be taken into account; and in the smaller cities the population per acre is much less than in the larger ones. Of the fifty cities thirty-two possess chemical engines; and only thirteen of these are found among the smaller cities. The number of fire engines is not necessarily a measure of the protection offered in the various cities, since in some of these showing a small number of engines relative to their size the water pressure over

a considerable part of the city may be so high as to make their use generally unnecessary.

These fifty cities are pretty well distributed over the country, and their populations range consecutively from about 7,000 to more than 500,000. It seems probable, therefore, that they may be taken as fairly representative of the cities throughout the country.

FIRE ALARM BOXES

City (Arranged in Order of Population)	Number	Description	Doors (Keyless, Distributed Keys, Attached Keys)
Norwood, O.	30	Gamewell, plain, interfering, sector pull, weight actuated brush break.	Keys attached.
Marblehead, Mass.	40	Gamewell, non-successive, spring-actuated, brush break boxes; 11 interfering boxes, 29 non-interfering boxes.	Keys attached.
Berlin, N. H.	23	Gamewell make, spring-actuated, sector pull, brush contact, interfering type.	Keys attached.
Augusta, Me.	34	Gamewell make, spring-actuated, trigger pull type; 31 brush break boxes, 3 platinum point break boxes.	Keys attached.
Central Falls, R. I.	40	Stevens make, spring-actuated and non-successive. 27 non-interfering type, trigger pull, 13 interfering type, brush break, sector pull.	2 keyless boxes, 36 attached keys, 2 detached keys.
Burlington, Vt.	41	Gamewell make, spring-actuated, 35 brush break contacts, 36 trigger pull, 5 sector pull.	3 keyless doors, 3 keys attached.
Oswego, N. Y.	50	Utica Fire Alarm Tel. Co., sector pull, spring-actuated, brush break, non-interfering type.	48, attached keys, 2 private boxes with detached keys.
Newport, R. I.	44	Spring-actuated, trigger pull type. 4 interfering boxes, 40 non-interfering boxes.	22, keys attached; 22, keys detached.
Bangor, Me.	63	Gamewell make, spring-actuated type. 40 sector pull, interfering brush contact break type, 23 trigger pull, non-interfering, platinum point break type.	Keys attached.
Fitchburg, Mass.	80	15 municipal make, 65 Gamewell. 68 interfering, brush contact, 12 non-interfering, platinum point break boxes.	78, keys attached; 2, keys distributed.
South Omaha, Nebr.	13	Eight Inter-State Fire Alarm Co. boxes, positive, non-interfering, successive, spring-actuated, push button type with single platinum break contacts. 5 Gamewell, plain, non-interfering, non-successive, spring-actuated, trigger pull type with brush break contacts.	1 box has keyless door, 1 box attached key; 11, keys distributed.
Superior, Wis.	61	Gamewell make, non-interfering; 3 successive, platinum point break; 58 non-successive, brush break, weight-actuated.	58, keys attached; 3, keys detached.
Springfield, Ill.	68	66 interfering, brush break, sector pull, six-call police signaling system boxes, equipped with telephones, manufactured by U. S. Police & Telegraph Signaling Co.	Keys attached.
Binghamton, N. Y.	103	27 Gamewell boxes (plain, interfering type, with sector pull and brush breaks); 23 Gamewell boxes (non-interfering type with sector pull and brush breaks); 52 Star boxes (non-interfering type with trigger trip and hard-silver contacts); 1 Star box (successive, non-interfering type, with trigger trip and hard-silver contacts).	All but two with keys attached.
Pawtucket, R. I.	117	Spring-actuated, trigger pull, non-interfering types. 38 Gardner and Crane boxes, non-interfering; 55 Gardner boxes, non-interfering; 4 Star boxes; 59 Gamewell, positive, non-interfering, non-successive; 13 Gamewell, positive, non-interfering, successive; 1 U. S. School box; 1 Gamewell school box.	10 keyless boxes, 101 boxes with keys attached, 6 boxes with detached keys.
Brockton, Mass.	100	Gamewell make, spring-actuated, trigger pull, non-interfering type.	Keyless doors or keys attached.
Altoona, Pa.	78	Gamewell make, 12 positive, non-interfering, successive, spring-actuated, trigger pull boxes with platinum point breaks. 66 plain, non-interfering, spring-actuated, lever pull, "Excelsior" type boxes with brush breaks.	20, keys attached; 58, detached keys.
Lincoln, Nebr.	39	Gaynor make, interfering brush break, spring-actuated, trigger-pull type.	20, keys attached; 19, keys distributed.
Norfolk, Va.	98	Gamewell make, spring-actuated, non-interfering type.	Keys attached.
Utica, N. Y.	121	Gamewell make, sector pull, spring-actuated, non-interfering, non-successive, double brush break.	109, keys attached; 12, keys detached.
Duluth, Minn.	128	Gamewell make, non-interfering. 114 sector pull, weight-actuated; 13 sector pull, spring-actuated; 1 trigger pull.	7 keyless boxes, 17 keys attached, 104 keys distributed.
Lawrence, Mass.	100	82 Gamewell boxes, 17 Crane boxes, 1 American Fire and Police box.	12 boxes with auxiliary attachment, 77, keys attached; 23, detached keys.
Lynn, Mass.	131	Gamewell make, spring-actuated, trigger pull, non-interfering type.	Keys attached.
Schenectady, N. Y.	69	68 Gamewell, 1 Star, spring-actuated, non-interfering type.	1, keys distributed; 67, keys attached.
Bridgeport, Conn.	195	Gamewell make, non-interfering, non-successive, spring-actuated, trigger pull. 104 plain brush break, 6 platinum point break.	107, keys attached; 3, keys detached.
New Bedford, Mass.	110	Gamewell make, spring-actuated, trigger pull type.	11, keys attached; 78, keys detached.
Reading, Pa.	89	Gamewell make, 4 round, trigger pull; 1 non-interfering type; 119 spring-actuated; 2 weight-actuated.	3 with auxiliary attachment, 59 without auxiliary attachment; 2, keys attached; 60, keys detached.
Camden, N. J.	121	Gamewell make, 4 round, trigger pull; 1 non-interfering type; 119 spring-actuated; 2 weight-actuated.	138, keys attached; 1 with auxiliary attachment.
Lowell, Mass.	139	Gamewell make, spring-actuated, trigger pull, non-interfering type. 135 plain non-interfering type; 4 successive type.	Keys attached.
Albany, N. Y.	173	Pearce & Jones type, positive acting, but without non-interference mechanism; 2 Gamewell "Nonpareil" boxes.	18 keyless doors; 118, keys distributed; 13 private.
Trenton, N. J.	85	Gamewell, plain	139 with key breaks, 94 with brush breaks, keys attached.
Hartford, Conn.	149	Non-successive, non-interfering, spring-actuated, trigger pull type; 108 Gamewell, 41 U. S. Fire & Police Tel. Co.	4 keyless doors; 50, keys attached; 128, keys distributed.
Dayton, O.	233	131 plain interfering, 79 non-interfering, 23 non-interfering successive type; all Gamewell boxes.	8 keyless boxes; 213, detached keys; 1, key in lock.
Fall River, Mass.	182	Non-interfering, spring-actuated, trigger pull type; 92 Crane boxes; 90 Gamewell boxes.	In mercantile district 33, keys attached, rest distributed.
New Haven, Conn.	222	Non-interfering, non-successive, spring-actuated, trigger pull type. 35 Crane boxes (Nonpareil type); 40 U. S. boxes; 147 Gardner boxes (Nonpareil type).	7, keyless doors; 21, keys attached; 73, keys distributed; 7, private with keys in door.
Syracuse, N. Y.	179	Non-interfering, brush break boxes, all Gamewell, except 2 Star boxes.	Keys attached.
Omaha, Nebr.	108	Non-interfering, spring-actuated, trigger pull. 51 plain, non-interfering, non-successive, brush break, 4 round type, Gamewell; 57 positive, non-interfering, successive, platinum point break.	273, keys attached.
Toledo, O.	296	Gamewell boxes, plain, interfering, weight-actuated, sector pull.	25 keyless doors, 16, keys attached; 162, keys detached.
Rochester, N. Y.	291	21 Gamewell succession type, 272 non-interference type.	
St. Paul, Minn.	203	200 Gamewell boxes, 3 U. S. Fire & Police System boxes. 100 boxes with brush break; 78 boxes with platinum point, single break; 25 boxes with platinum point, double break; 25 positive, non-interfering, successive boxes, spring-actuated, trigger pull; 175 plain, interfering, non-successive boxes, weight-actuated, sector pull; 3 old-style, interfering, non-successive boxes, hook pull.	
Louisville, Ky.	364	23 Gamewell, plain, interfering, sector pull, spring-actuated.	126, keys distributed; 218, keys attached.
Minneapolis, Minn.	318	Gamewell make, non-successive, brush break type. 264 boxes with non-interference mechanism; 54 boxes without non-interference mechanism.	92 keyless doors; 226, keys detached.
Newark, N. J.	385	Interfering.	380, keys attached; 5, keys distributed.
Cincinnati, O.	636	514 Gamewell, sector pull, weight-actuated. 2 Post & Co. sector pull, weight-actuated; 34 Union, trigger pull, spring-actuated; 3 Chester, hook pull, spring-actuated; 83 Crane, old type.	1 keyless door, private boxes, keys detached; all others keys attached.
New Orleans, La.	253	Gamewell make, spring-actuated, trigger pull, non-interfering, successive type.	Keys distributed.
Providence, R. I.	418	All except 60 are non-interfering.	Keys distributed.
Pittsburg, Pa.	701	595 Gamewell, plain, interfering, weight-actuated, sector pull boxes; 45 Gamewell, non-interfering, successive, spring-actuated, trigger pull boxes; 60 Star, non-interfering, successive, spring-actuated, trigger pull boxes; 1 Am. Electric Alarm Co., plain, interfering, weight-actuated box.	50, keys attached; rest, keys distributed.

AUTOMOBILES FOR MUNICIPAL SERVICE

Forty Cities in Which Auto Fire Apparatus Is Used—Nineteen Where There Are Auto Police Cars and Others in Miscellaneous Service—Descriptions of Cars—Economy and Efficiency

WITHIN the last year or two the use of automobiles by various municipal departments has increased and spread very rapidly, cities already using them adding new ones from time to time and cities which had not heretofore used them having adopted them for one or more municipal departments. The most common use seems to be in connection with the fire department, and the next possibly with the police, and ordinary touring cars or runabouts are used by one or more of the leading officials in other departments whose business is connected directly with construction or maintenance scattered widely throughout the city. A partial list of cities which are using automobiles has been made by us, the information having been collected from various sources and making no pretense to be complete.

FIRE DEPARTMENT

We find automobile fire apparatus used as follows:

New Bedford, Mass., combined chemical and hose wagon furnished by the Locomobile Company.
 Springfield, Mass., two squad wagons, two chief's wagons, and one combination furnished by the Knox Automobile Company.
 Chicopee, Mass., one combination chemical and hose truck made by the Knox Automobile Company.
 Boston, Mass., two protective fire cars, by the Knox Automobile Company.
 Waterbury, Conn., a hose cart and one chemical engine furnished by the Locomobile Company.
 Greenwich, Conn., one straight chemical engine furnished by the Locomobile Company.
 Bridgeport, Conn., one fire chief's car and one chemical engine furnished by the Locomobile Company.
 Hartford, Conn., one combination chemical and hose wagon furnished by Knox Automobile Company.
 Thompsonville, Conn., combination chemical and hose wagon furnished by Knox Automobile Company.
 Bristol, Conn., combination chemical and hose wagon furnished by Pope-Hartford Company.
 Newburgh, N. Y., combination chemical and hose truck furnished by Knox Automobile Company.
 New York City, high-pressure wagon furnished by Knox Automobile Company.
 Brooklyn, touring cars for the chief and one commissioner, manufactured by the Locomobile Company.
 Buffalo, N. Y., chief's touring car, by Pierce-Arrow Motor Car Company.
 Ocean Grove, N. J., combination chemical and hose wagon, by the Auto-Car Manufacturing Company.
 Newark, N. J., salvage corps wagon, by the Locomobile Company.
 Trenton, N. J., one chief's car and one combination chemical and hose wagon, by the Stanley Company.
 Pittsburg, Pa., gasoline fire engine, by the American Motor Fire Apparatus Company.
 Hamilton, Md., fire apparatus furnished by the Rapid Motor Vehicle Company.
 Augusta, Ga., engine and combination chemical and hose wagon, by the Webb Motor Fire Apparatus Company.
 N. Birmingham, Ala., motor fire engine, by the Webb Motor Fire Apparatus Company.
 Big Springs, Tex., motor fire engine, by the Webb Motor Fire Apparatus Company.
 Akron, Springfield and Youngstown, O., each have motor fire engines furnished by the Webb Company.
 Rockford, Ill., Webb motor fire engine.
 Lansing, Mich., Webb motor fire engine.
 Detroit, Mich., emergency touring car, by the Packard Motor Car Company.
 Neodesha, Kan., Webb motor fire engine.
 Hutchinson, Neb., fire apparatus by the Rapid Motor Vehicle Company.
 Joplin and Springfield, Mo., Webb motor fire engines.
 St. Louis, Mo., salvage corps wagon and two touring cars for the department, by the Winchester, Ky., Webb Fire Engine and Locomobile Company.
 St. Paul, Minn., chief's runabout, by the Pierce-Arrow Motor Car Company.
 Tulsa, Okla., Webb motor fire engine.
 Colma, Nev., fire apparatus, by the Rapid Motor Vehicle Company.

In California a number of automobiles have been built, using the Rambler chassis, for the cities of Long Beach, Hollywood, Pasadena, Pomona and San Diego. Just what service these have been put to we are not informed, except that the one in Pomona is used as a chemical engine.

Vancouver, B. C., has a Seagrave aerial truck.

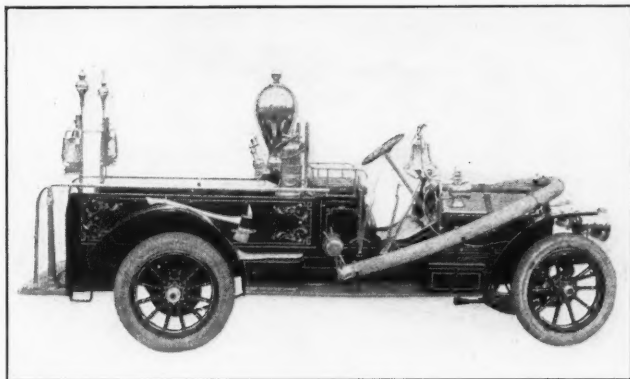
POLICE DEPARTMENT

New York City, police patrol wagons, by the Rapid Motor Vehicle Company.
 Pittsburg, Pa., seven-passenger touring car used as a patrol wagon, by the Pierce-Arrow Motor Car Company.
 Baltimore, Md., police patrol wagon, by the Locomobile Company.
 Trenton, N. J., combination police patrol wagon and ambulance, by the White Company.
 Cincinnati, O., police emergency wagon.
 Indianapolis, Ind., three police patrol wagons, by the Rapid Motor Vehicle Company.
 Lansing, Mich., police patrol, by the Oldsmobile Company.
 Omaha, Neb., police patrol wagon, by the White Company.
 St. Louis, police patrol, by Studebaker Brothers.
 Louisville, Ky., three police patrols, by the Cadillac Motor Car Company.
 Duluth, Minn., police patrol.
 Pueblo, Col., police patrol, by the Rapid Motor Vehicle Company.
 Boston, Mass., uses a White steam wagon as a delivery car for the public library.
 Bridgeport, Conn., uses a city ambulance furnished by the Locomobile Company.
 New York City uses a number of ambulances for the Department of Charities furnished by the White Company and also by the Cadillac Motor Car Company; and the Finance, Health, Water and other Departments use Cadillac runabouts and touring cars.
 Philadelphia uses two automobile ambulances.
 Cincinnati, O., uses a Pierce-Arrow ambulance.
 Chicago Park Commissioners use a Locomobile touring car.
 Oakland, Cal., uses an electric ambulance furnished by the Baker Motor Vehicle Company.

The Chase Motor Truck Company and the Coldwell Lawn Mower Company have furnished motor lawn mowers for parks, public golf grounds, etc. Road rollers, which are furnished by a number of manufacturers, are of course automobile, but their use has for years been quite general.

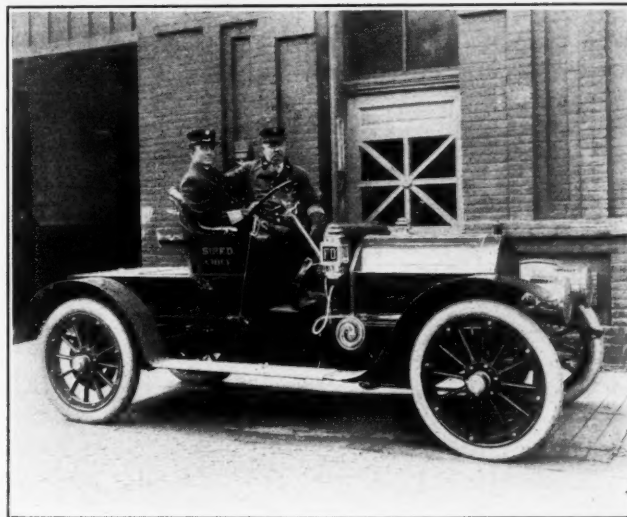
Few of the above have been in service for more than a few months, and none, we believe, more than four or five years. For instance, the first automobile furnished to municipalities by the Locomobile Company was, we believe, the car of Fire Chief Lally of Brooklyn, which has been in service since 1904, and we doubt whether there are many which were in use before that time. The same company sold to municipalities three cars in 1905, four in 1906, four in 1907, nine in 1908, and four so far this year.

To attempt to describe all of the above cars would occupy too much space; but the following descriptions are given as typical examples of most of them: The Knox combination car used at Springfield and Chicopee carries two 25-gallon chemical tanks and 200 feet of chemical hose, 1,000 feet of water hose and is equipped with a 4-h.p. motor. It also has room for ten men. The wheel base is 10 feet 5 inches, the tread 5 feet $\frac{3}{4}$ inch. It has four air-cooled engine cylinders and makes a maximum speed of 30 miles per hour. The price, exclusive of water hose, is about \$4,000. The Protective Fire car, such as was furnished for Boston, carries four men and the regular protective fire equipment. The tread is 56 inches and the wheel base 9 feet 4 inches. The engine is 40-h.p. and the speed 40 miles per hour. The equipment includes 18 standard covers, hand extinguishers, axes, iron bar, ceiling pike, plaster hook, squilgee, door opener, ladders, shovels, three search-lights, side lights and a large bell. The price is approximately \$4,000. The fire engine furnished to the Radnor Fire Company, of Wayne, Pa., carries a pump with a capacity of 360 gallons per minute, the engine having four Waterous water



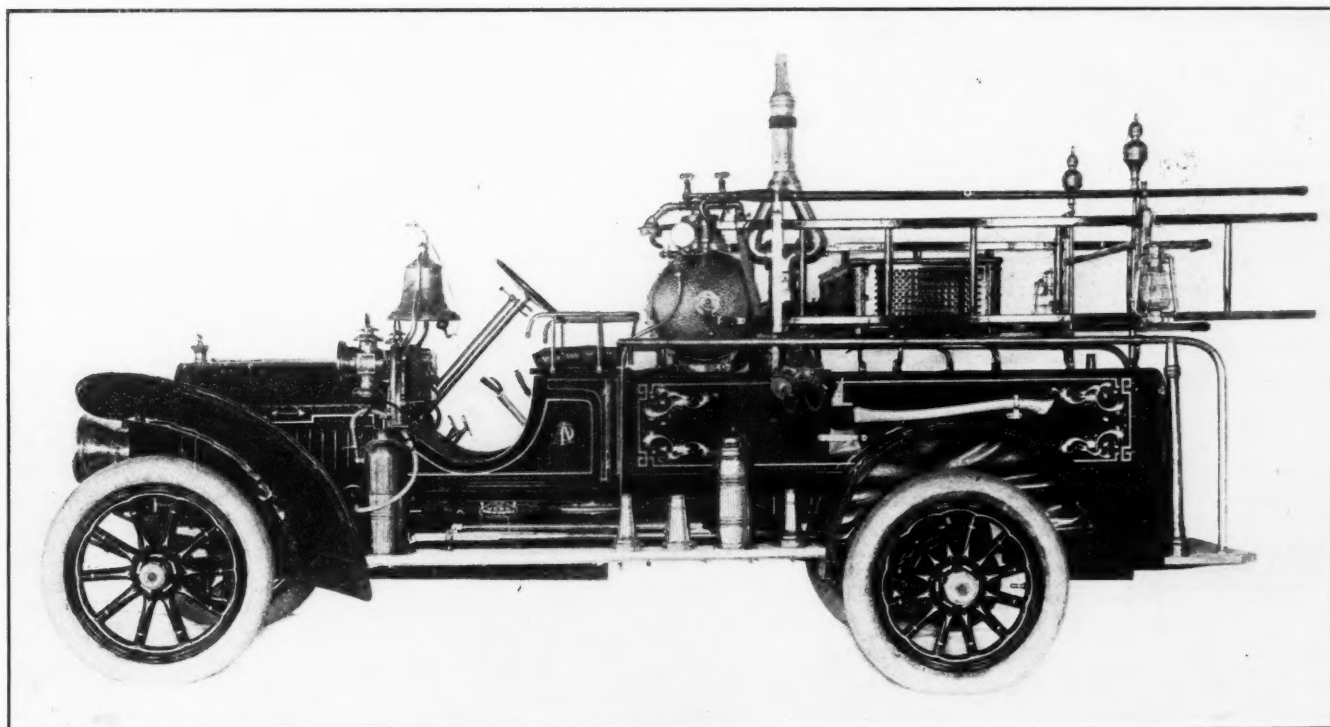
WEBB MOTOR FIRE ENGINE

cooled cylinders. The wheel base is 8 feet 4 inches and the tread 56 and 58 inches. The automobile engine is propelled by two air-cooled cylinders of 20 h.p. and has a maximum speed of 15 miles per hour. The price is about \$5,000. The Webb motor fire engine has a capacity of 700 gallons of water per minute and a maximum speed of 60 miles per hour, the horsepower being 70. It is capable of carrying 1,000 feet of hose and seven men. In addition to the engine it also carries two three-gallon hand chemical extinguishers, two axes, two electric headlights, two fire lanterns, four nozzle holders, oil



ST. PAUL FIRE CHIEF'S RUNABOUT. PIERCE-ARROW

body suitable for carrying twelve men. The chassis is standard except that it has heavier springs than a touring car. It carries two men on the front seat, six on the lengthwise seats of the tonneau, two on the rear running board and one on each side running board. It also carries two 3-gallon and one

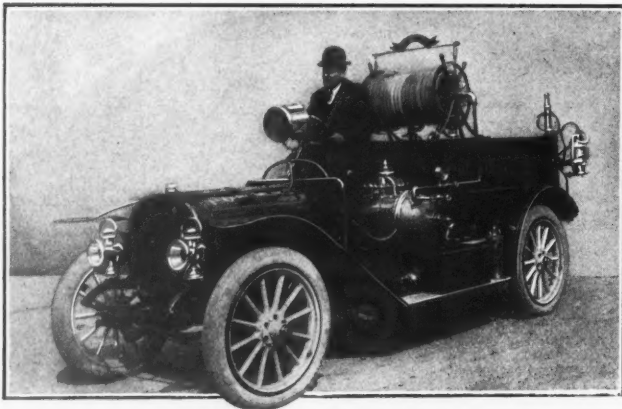


AUGUSTA COMBINATION CHEMICAL AND HOSE. WEBB

torches and other minor appliances. The Webb combination chemical and hose wagon has a chemical capacity of 40 gallons, carries 1,000 feet of $2\frac{1}{2}$ -inch hose and has a maximum speed of 40 miles per hour. It also carries 200 feet of $\frac{3}{4}$ -inch hose, 24-foot ladder, hand extinguishers, axes, lanterns, etc. The motor chemical engine carries two 35-gallon chemical tanks, has a speed of 40 miles, the motor being 24 h.p., and carries the same miscellaneous appliances as the combination wagon. The Pittsburg chemical gasoline engine is driven by a 115-h.p., six-cylinder motor, having a maximum speed of 60 miles per hour. The same engine operates centrifugal pumps throwing two streams at a time. The machine can carry fifteen men in addition to the equipment and 1,000 feet of water hose. The Hartford combination wagon carries a 40-gallon chemical tank, 250 feet of $\frac{3}{4}$ -inch hose and 1,000 feet of water hose; two 15-foot ladders, two hand extinguishers, fire axes, lanterns, etc. Detroit's touring car is a Packard "30" chassis furnished with a

6-gallon chemical fire extinguishers and a tool box. This is an emergency wagon used to supplement the force at any fire wherever located. The chief's car of St. Paul is a three-passenger runabout with two seats in front and the third a disappearing rumble seat (in the picture this seat is folded under the rear deck). The chemical wagon used at Ocean Grove carries two 35-gallon tanks and 150 feet of hose, and has room for from twelve to sixteen men. It is driven by a 40-h.p. engine and has a maximum speed of 50 miles an hour. The Pomona, Cal., chemical engine consists of a home-built body on a Rambler chassis of 45 h.p. The chemical apparatus consists of three large chemical tanks, hand extinguishers, a hose reel with a capacity of 150 feet and room for from ten to twelve men.

The Pittsburg Police Department car is a seven-passenger touring car. Special holsters are attached to the back and front seats for carrying riot guns and rifles, while on the run-



COMBINATION CHEMICAL, POMONA, CAL. RAMBLER CHASSIS

ning boards are extra fire extinguishers. The Louisville cars, an illustration of which appears in connection with Chief Haager's paper on another page of this issue, are what is known as Cadillac "thirty" cars and, as is seen, are in no way different from ordinary cars of that class, the reason for which

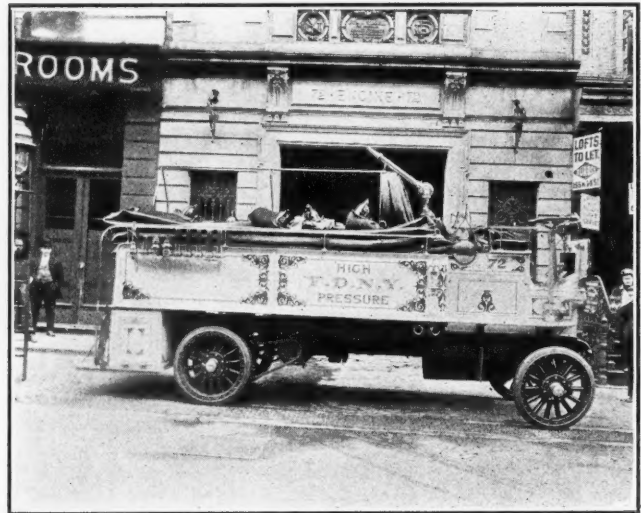


NEW YORK HOSPITAL AMBULANCE. WHITE STEAMER

is described by Chief Haager in his paper. The Baker electric ambulance used at Oakland is 65 inches high, 43½ wide and 86 long. It has four sliding windows with ventilators in the front, sides and rear. It contains two folding seats on the

sides and a cot 85½ by 26 inches. The motor is a 3½ h.p. series wound.

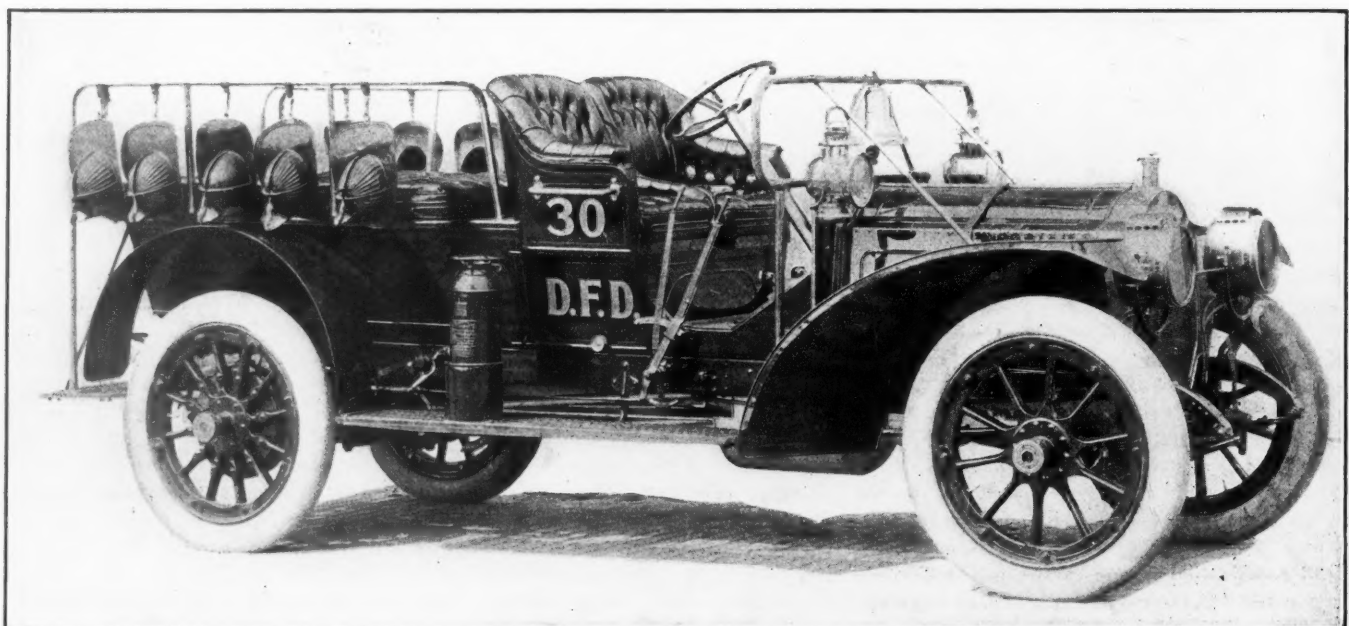
In addition to the above we learn that Brookline, Mass., has contracted with the Knox Automobile Company for a fire chief's car to carry four men and a light equipment consisting of a pony extinguisher, axes and ladders, and having a maximum speed of 50 miles an hour. Also for a combination car having a 60-h.p. engine and carrying a 36-gallon chemical tank, 250 feet of chemical hose and 1,000 feet of water hose. It will be able to carry ten men. Each car will be fitted with electric side and tail lights, gas lights and a 10-inch swinging searchlight; also with a siren horn, in addition to which the combination will carry a 10-inch locomotive bell.



NEW YORK HIGH PRESSURE WAGON. KNOX AUTOMOBILE CO.

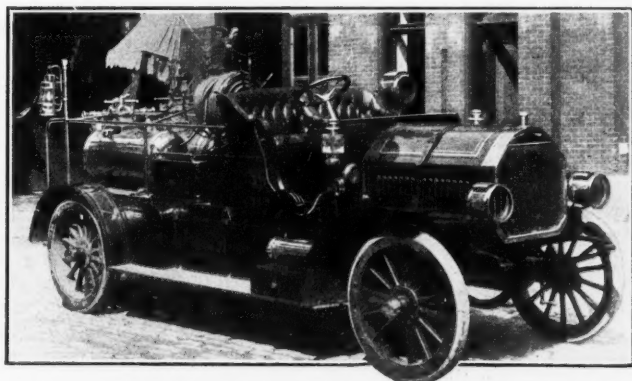
The Chicago Police Department uses three automobile police patrol wagons, one of which is shown in the accompanying photograph. The plans for this wagon were made by Superintendent of Construction Ray, according to the ideas of Acting Chief Scheutler. The wagon was built in the repair shop of the department at a total cost of \$3,300. It is driven by a 4-cylinder, 54-hp. Continental motor. It weighs 6,100 pounds and carries 14 police officers seated.

A record is kept of the service performed by the various wagons. As an illustration, the services performed by the Tenth Precinct in which this wagon assisted during the month of June, 1909, were as follows: Alarms responded to, 83; fires attended, 7; miles traveled, 929; sick and injured persons taken



EMERGENCY CAR, DETROIT FIRE DEPARTMENT. PACKARD

to hospitals or to their homes, 4; and to the station, where they were cared for, 1; prisoners taken to division police courts, 72; lost children taken to parents, 2; destitute children taken to orphan asylum, 1; conveying prisoners from one point to another, 15; conveying prisoners to juvenile house, 1; conveying prisoners to Bridewell, 158; miscellaneous and incidental runs, 10.



COMBINATION CHEMICAL AND HOSE, OCEAN GROVE, N. J. AUTO-CAR MANUFACTURING CO.

As to the cost of automobile apparatus as compared to horse drawn, the former has been introduced so recently in most cities that it is too early to expect any definite figures, especially concerning maintenance and life of apparatus. One of the first, if not the very first city to use automobiles in the fire department was Springfield, Mass., whose flying squadrons A and B were described in the MUNICIPAL JOURNAL for April 8, 1908. Mr. A. H. Rogers, chairman of the Fire Committee of Springfield, gives the following comparative statement as to the cost of maintaining these automobile auxiliary squads and a small horse-drawn squad with a three-horse hitch, as follows:

Auxiliary Squad—Three-Horse Hitch	
Forage	\$390.00
Horseshoeing	140.00
Oil for all-night lamps.....	4.00
Squad and exercise wagon repairs.....	25.00
Harness repairs	18.00
Stable tools and incidentals.....	9.00
Veterinary services and medicine.....	23.00
Polish for brass work, harness oil, soap.....	8.00
Total cost for one year.....	\$617.00

Auxiliary Squad—Automobile

Tire up-keep	\$139.20
Gasoline and oil.....	55.48
Oil for all-night lamps.....	4.00
Recharging Prest-o-Lite gas tank.....	3.00
Gas generator	6.00
Repairs and adjustments.....	85.14
Polish for brass work.....	10.00
Tire "puncture and out" repairs.....	25.00

Total cost for one year..... \$327.82

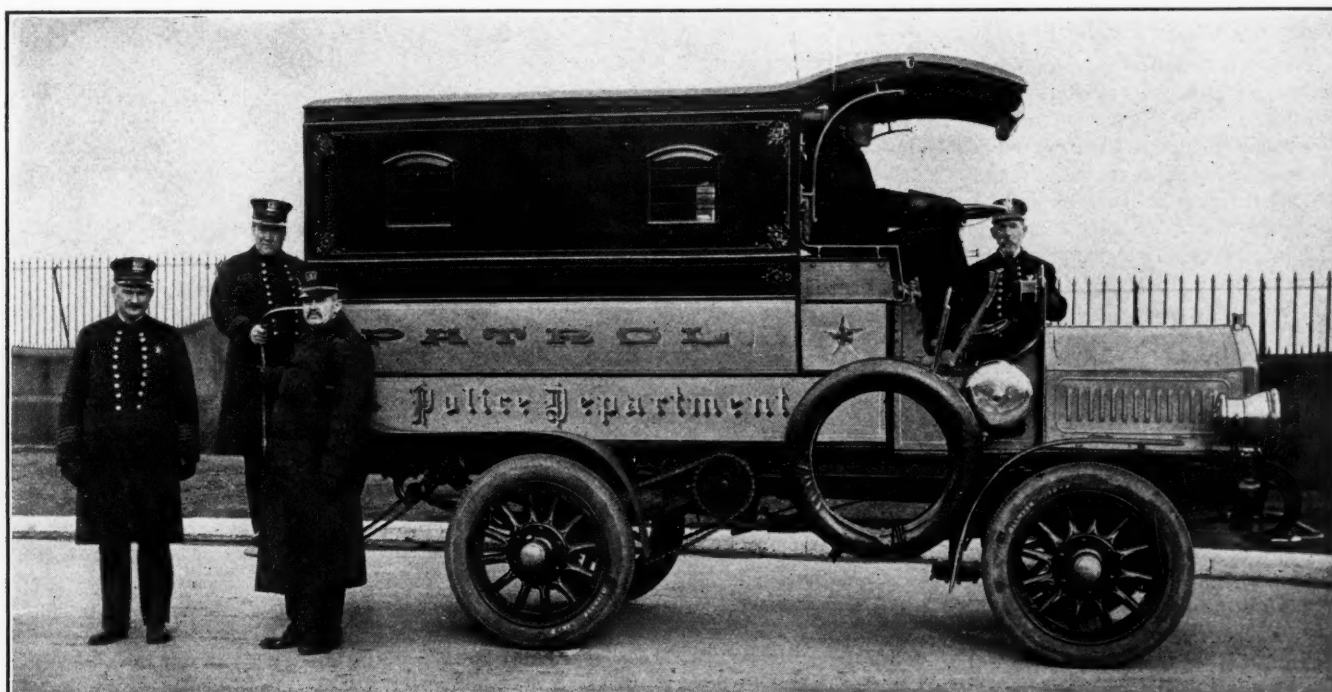
It is also estimated that the advantage offered by greater speed is equivalent to the addition of from 60 to 80 call men to the force of the department. For the year ending November



NEW YORK BOARD OF WATER SUPPLY TOURING CAR. LOCOMOBILE

30, 1908, squad A answered 210 alarms and traveled 1,145 miles; the cost of general maintenance during the year was \$103.54 and of repairs caused by accident \$172.80, a total of \$276.34. This squad went into commission in September, 1906. In August, 1908, motor hose No. 7 went into commission. In the three months and six days to the end of the fiscal year it received 29 alarms and covered 66 miles, the total cost for maintenance being \$3.08.

At a meeting of the New Jersey fire chiefs the subject of automobile apparatus was discussed. Here it was stated that a motor fire engine would take the place of five horses, that

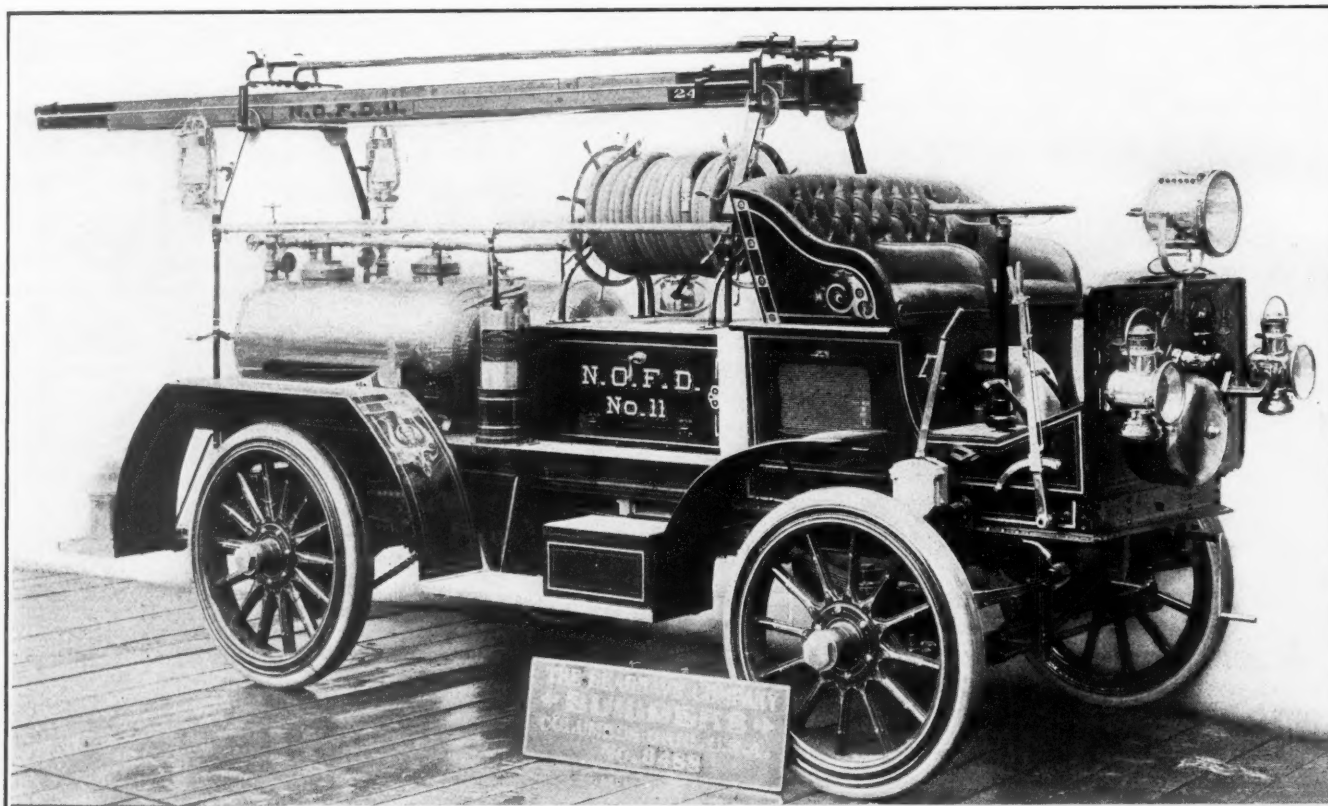


ONE OF CHICAGO'S POLICE PATROL WAGONS

seven men instead of ten would be required, that a saving would be made in coal bills required for keeping up a continuous fire under a steam fire engine, and that the economy in engine house room would be considerable, it being possible to double the number of existing horse-drawn apparatus without the necessity of building new houses, if automobile apparatus be substituted.

It is stated that the exact cost of the maintenance of the

automobile combination chemical engine in Bridgeport, Conn., from January 1, 1908, to January 1, 1909, was as follows: Tire chains, \$22; gasoline, \$57; oil, \$37.70; tires, including tire repairs, \$64.25; all other repairs on machine, \$51.78; repairs to ignition apparatus, \$16.20; batteries, \$1.50, and other expenses making a total of \$276.18. The minimum monthly cost of gasoline was \$2.20 during December and the maximum was \$12.60 during March.



NEW ORLEANS CHEMICAL ENGINE. SEAGRAVE COMPANY

LOUISVILLE FIRE DEPARTMENT

Force and Apparatus—Repair Shop—Cost Records Kept of all Shop Work—Monthly Reports from Each Captain Giving Cost of Maintaining His Company—Medal for Best Annual Record

THE Fire Department of the city of Louisville, Ky., like the Police Department, is managed by the Board of Public Safety, which looks after the business affairs of both departments. The Fire Department now has 246 regular men beside the substitutes. These men handle 21 steamers, 6 trucks, one water tower, 5 hose wagons carrying both 2½-in. and 3-in. hose and three of which are equipped with deck pipes, and 16 hose reels. The chief has a Cadillac automobile for attending fires, while the four assistant chiefs in charge of the four districts of the city use horse-drawn vehicles. The chief's automobile and the hose wagons are lighted with electric lights from storage batteries. A search light on each wagon materially assists at fires. Practically all apparatus is equipped with rubber tires and those not already so equipped are having the rubber tires put on as fast as they come to the repair shop.

Most of the water supply for fighting fires is taken from cisterns, with which the city is pretty thoroughly provided. These hold from 200 to 1,000 barrels of water, depending on their location. The water pipe connections to these are such that they are easily kept full, and the valve controlling the supply is operated by hand so that no chance is offered for an automatic device to get out of order. Large manholes in the tops of these cisterns allow the entrance of the suction pipes and as many as nine engines have pumped from one cistern at the same time.

The local Board of Fire Underwriters maintains two horse-drawn and one automobile salvage wagon. The Louisville Lighting Co. and the Louisville Street Railway Co. both maintain wagons and crews which attend fires both day and night and handle the electric wires so that the members of the department do not experience danger and trouble from this source.

The fire alarm telegraph is in excellent shape and is well handled. Part of it is somewhat antiquated, however, and will be replaced as soon as funds are available.

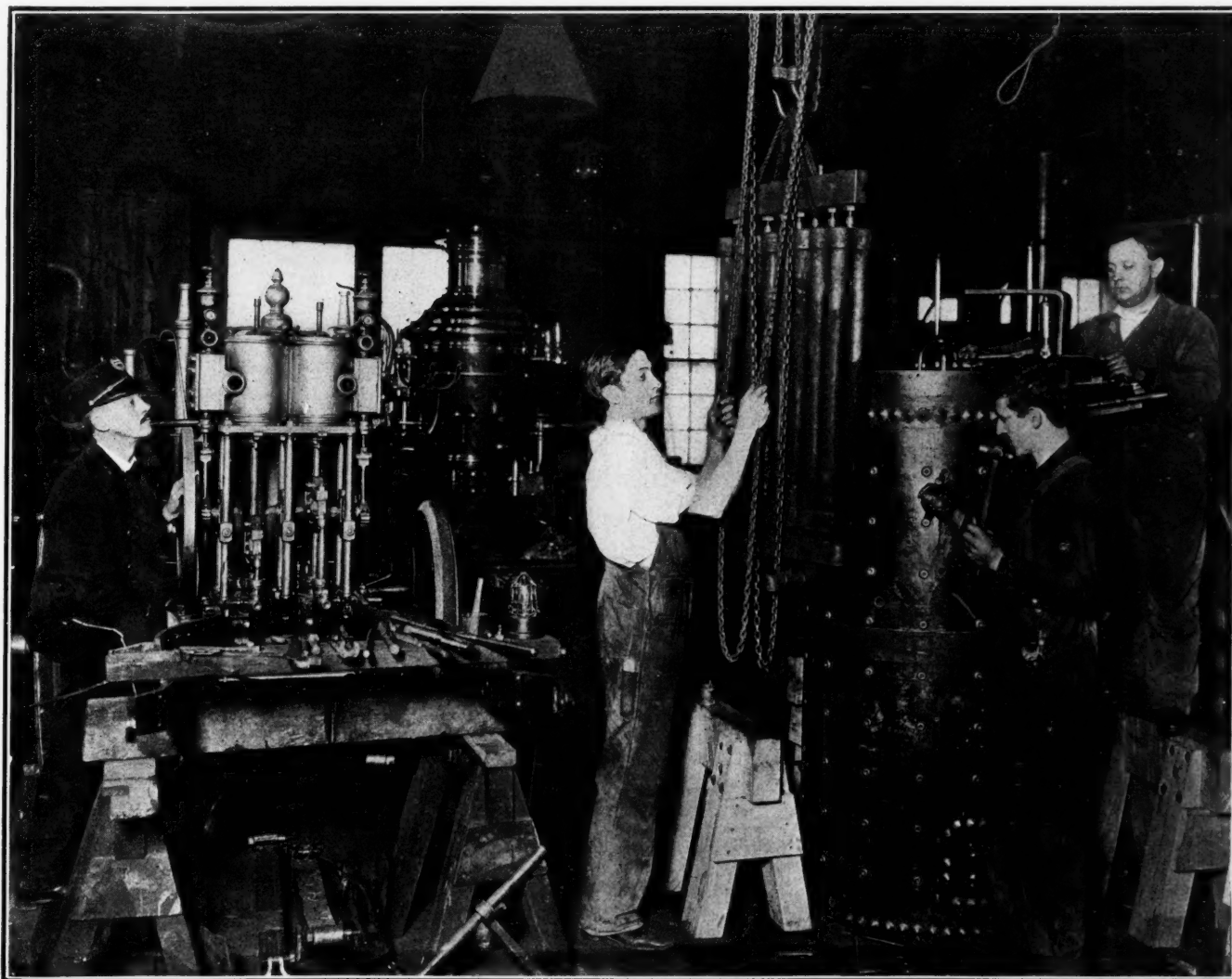
In connection with the Fire Department there has been established a very complete repair shop under the charge of Arnold Neunschwander, mechanical engineer. This shop occupies a large two-story building in the rear of the central fire station. Here are offices, drafting room, machine and forge shops. Twenty-seven men are employed here who are not members of the regular department. They work eight hours a day and receive the regular union scale of wages. Here are made all the ordinary repairs, as well as extraordinary, such as the complete rebuilding of machines. While the engine boilers are not built in these shops, they are designed here. All nozzles, hose couplings, hose splicers, etc., are machined here. A harnessmaker is employed the year round making the best grade of harnesses for the department as well as doing the leather repairing. Machines are there for placing rubber tires on the apparatus. Some of the special work of the shops has been the

building of attachments for the steamers so that a connection can be made by a flexible cotton hose to a hydrant without having to remove the cistern suction line. Old rubber valves from the pump have been fitted on the mouths of all nozzles to prevent injury to them in case of their striking anything. Special hose holding devices, protected from electrical contact with rubber handles, have been built, which makes it possible for one man to handle any sort of stream. The shops have long proven their worth to the department. No work is done without an order from the chief, which order is made in triplicate, one going to the Board of Safety and one going to the shop. When work is being done the exact time consumed and the cost of time and material used are recorded, so that a close watch can be kept.

The instructions are that "A set of cost sheets will be headed up for every job, large or small, as soon as received. The original sheet will follow the job through the shop, and all labor and material used will be recorded thereon and the sheet returned to the Master Mechanic as soon as the job is finished. Duplicate and triplicate sheets will then be filled out showing the cost of the job in the detail. Send the duplicate to the Board of Supply and the triplicate to the Chief's office promptly." The cost sheet contains shop order numbers, date of receiving and of finishing the work and the date delivered; the company for which the work is done and the nature of the work. Also the date when the sheet is filled. A description of the labor and material used, the number of each workman employed on it, the hours of labor and pounds of material and the value of the same, all are entered on the sheet from time to time as they are employed upon the job.

But by far the most interesting feature of the department is the system, installed Sept. 1, 1908, of monthly cost reports from each Captain. At that time the Board of Safety, the Mayor and the Chief of the Fire Department offered a medal to the captain who should make the best record during the year, this record to be based on the efficiency and condition of the company and apparatus and the cost per horse and per man. In working out the cost figures, inventory sheets are gotten up covering every item used in the department. These give a tabulated list of the stock on hand at the end of the month, that charged during the month and the amount on the inventory at the end of the preceding month; another column giving the sum of the last two, and a fifth giving this minus the first column, which would be the amount used during the month. Both the quantity and cost of the several items are given. These items are classified under the general heads of Apparatus Supplies, House Supplies, Bed Supplies and Horse Supplies. The list of apparatus supplies contains such materials as axes, lanterns, oil of various kinds, whips, etc. The house supplies consist of brooms, soap, dusters, hatchets, mops, and the like. Bed supplies include beds, blankets, mattresses, sheets, etc. Horse supplies include feed of various kinds, shoeing, blankets, curry combs, pitchforks, medicine, etc. An inventory sheet is prepared each month by each Captain, and from these are prepared a comparative sheet giving the record of each Captain. Such a sheet is reproduced herewith, except that the records of but two Captains and the totals are given, there having been twenty-five Captains altogether on the original sheet.

It is stated that this scheme has produced wonderful results,



LOUISVILLE FIRE DEPARTMENT REPAIR SHOP

Smoke funnel in ceiling for removing smoke from engines when being tested. Chief Mechanical Engineer Neunschwander at the left

MONTHLY COMPARISON SHEET No. 4
Cost of Supplies Per Company, Louisville Fire Department

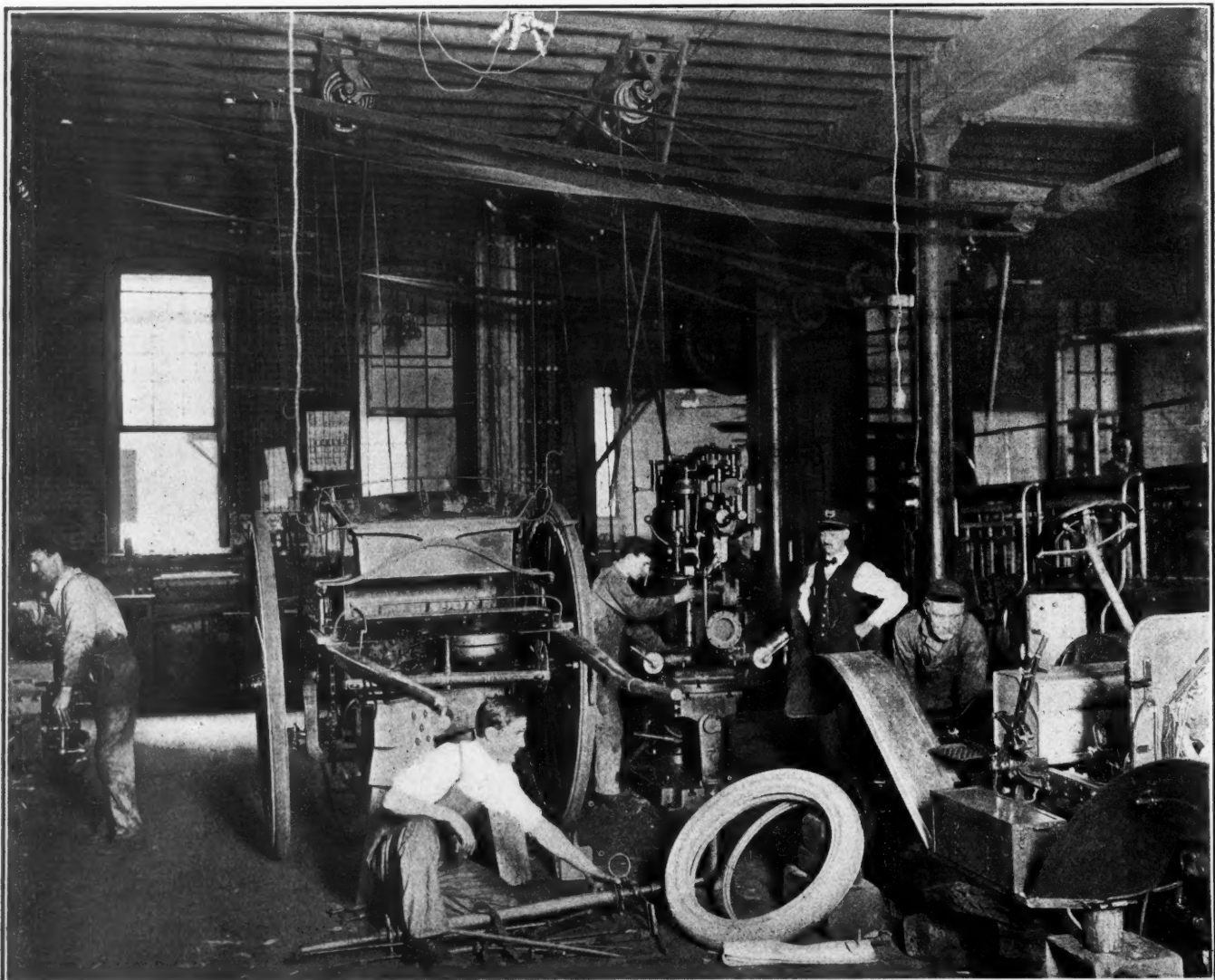
No.	COMPANY	CAPTAIN	FOR MONTH OF FEBRUARY, 1909											FOR MONTH OF MARCH, 1909										
			APPARATUS SUPPLIES			HOUSE SUPPLIES		BED SUPPLIES		HORSE SUPPLIES			TOTAL AVER.	APPARATUS SUPPLIES			HOUSE SUPPLIES		BED SUPPLIES		HORSE SUPPLIES			TOTAL AVER.
			No. Men	Amt.	Per Man	Amt.	Per Man	Amt.	Per Man	No H's	Amount	Per Horse	Per Co.	No. Men	Amt.	Per Man	Amt.	Per Man	Amt.	Per Man	No. H's	Amount	Per Horse	Per Co.
1	E Co.	Guy Green	9	\$1 83	\$0 16	\$38 96	\$5 99			6	\$38 50	\$9 81	\$16 95	9	\$2 03	\$0 23	\$50 21	\$5 58			6	\$57 83	\$9 64	\$15 45
2	E Co.	Pat Carrol																						
5	H. & L. Co.		20	5 46	27	59 80	2 96			11	83 56	8 05	11 31	20	5 06	25	77 97	\$ 90			11	120 35	10 94	15 09
	Water Tower																							
TOTAL.....			223	\$38 27	\$0 17	\$806 60	\$3 61	\$5 40	\$0 02	128	\$1108 98	\$8 66	\$12 63	222	\$46 70	\$0 19	\$739 42	\$3 33	\$3 27	\$0 01	126	\$1114 66	\$8 83	\$12 22

NOTE—The Company averages are found by adding together the four items of cost per man and per horse. Each Captain, by comparing the average of his Company for February with that of March, can tell whether his expenses are increasing or decreasing. No. 19 has the lowest average, for February and March, but this Captain has made the mistake of under-feeding his horses and has been reprimanded by the Board of Public Safety. A second offense of this kind will cause charges to be preferred against any Captain.

The Medal will not be won by a Captain who obtains economy by underfeeding his horses, but it will be won by the Captain who cuts out all waste and unnecessary expense and still maintains the efficiency of his Company and keeps his men, house and premises neat and orderly.

lighting bills alone having been reduced over \$300 per month. The men are also much more careful about letting brooms, pails, etc., leave the fire houses, so that there is no loss from that source, and the men are more economical in every way. There was at first a slight tendency to underfeed the horses, but this was promptly checked, and the veterinary set a minimum of three gallons of oats and ten pounds of hay a day.

Furthermore, he makes frequent examinations to see that all animals are in good condition. For the fiscal year ending Aug. 31, 1908, the cost for feeding, bedding, shoeing and veterinary service for each horse in the department was \$10.48 per month, and it is quite probable that during the present year this will be somewhat reduced. This plan is one of the best we have seen in any department.



LOUISVILLE FIRE DEPARTMENT REPAIR SHOP

At the right, Chief Tyson's auto undergoing repairs after accident in which the Chief was injured

MUNICIPAL JOURNAL AND ENGINEER

Published Every Wednesday by Swetland Publishing Company
THIRTY-NINTH STREET BUILDING
231-241 West Thirty-ninth Street, New York

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SUBSCRIPTION RATES

United States and possessions, Mexico, Cuba.....\$3.00 per year
All other countries..... 4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office
at New York, N. Y., under the Act of Congress of March 3, 1879.

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It is also desired that the facilities furnished by the reference library in this office should be widely known and freely used by those interested in municipal affairs. Visitors will be welcomed and provided with conveniences for search, and inquiries by mail will be promptly dealt with.

AUGUST 4, 1909.

CONTENTS

Fire Department of Lansing, Mich. (Illustrated).....	157
Automobile Fire Apparatus.....	159
Firemen Perform Other Duties.....	160
Fire Equipment and Fire Alarms.....	160
Automobiles for Municipal Service (Illustrated).....	162
Louisville Fire Department (Illustrated).....	166
Automobiles for Municipal Service.....	169
Free Hydrant Water in St. Paul.....	169
Automobiles for Police Departments (Illustrated).....	170
High Pressure System for Chicago (Illustrated).....	171
Producer Gas Pumping Engines.....	177
Motor Vehicles in England.....	178
Excess Speed Alarm for Motor Vehicles.....	178
Street Illumination.....	178
Denver's Dog Pound (Illustrated).....	179
Trenton's Experience with Auto Apparatus.....	179
Cincinnati's Daylight Ordinance.....	179
News of the Municipalities (Illustrated).....	180
Legal Notes—A Summary and Notes of Recent Decisions.....	188
News of the Societies.....	189
The Week's Contract News.....	190
Incorporations.....	207
Personals.....	208
Patent Claims (Illustrated).....	208
Trade Notes.....	209
Municipal Appliances (Illustrated).....	210
Book Reviews.....	212
The Municipal Index.....	212

Automobiles for Municipal Service

It may be surprising to many of our readers to learn to what an extent the use of automobiles in various classes of municipal service has been adopted during the past two or three years. Although runabouts were used in one or two cities as much as four years ago, we believe there were no auto engines in service more than two and one-half or three years ago. In an article on another page is given a list of forty cities which use automobile apparatus in their Fire Departments, and about one-half that number whose Police Departments use automobile cars; and it is not pretended that these lists are at all complete, in fact, within the last few days (too late to add them to the printed list), we have learned of several which are not included. This rapid increase is not merely the following up of a fad, but officials all over the country have been quoted as giving facts and figures justifying their preference for automobiles, especially for fire and police service. Many of these statements are given in this issue, and we recommend that chiefs and commissioners of those two departments seriously consider the matter should they have in mind any immediate increase in apparatus.

Free Hydrant Water in St. Paul

THE Secretary of the Board of Water Commissioners of St. Paul, Minn., Mr. John Caulfield, is said to have stated a few days ago that "a reduction of 30 per cent in water charges might be made if the Street Department were required to pay for the water used in flushing streets, etc., and if the Fire Department would pay what is incumbent upon it by the terms of the city charter." The present rate is 6.6 cents per 1,000 gallons, but Mr. Caulfield believes that this might be reduced to 4½ and possibly 4 cents if the consumers' rates were not required to cover city consumption, which should be paid for out of the city treasury.

In this case it would appear that it is the City Council which is to blame for this condition of affairs. Under the terms of the city charter the Fire Department is required to pay \$300 per annum for each mile of water mains, which is equal to about \$30 per fire hydrant, and bills made on this basis have been sent every six months to the City Council, but since 1891 no payments have been made on this account, except that four years ago about \$80,000 was paid by Council. On June 1 of the present year the amount owing the Water Department for fire service rendered the city was more than \$1,200,000. At the present time there are about 3,000 fire hydrants in service, so that the income from this alone should be about \$90,000 a year. In addition to this, the Street Department should pay for water used an amount which is estimated to be about \$25,000 a year. Previously 10 cents a week for every 100 feet of roadway sprinkled was paid to the Water Department for the water used for this purpose, but no payment has been made on this account for the last 10 years. If there be added the water used in the public buildings and for other municipal purposes, the amount which the city should pay the department would total to at least \$125,000 a year, Mr. Caulfield estimates.

While it is true that the payment of this sum to the Water Department would come out of the same pockets which are now paying the water rates, it is hardly probable that in all or even the majority of cases the combined amount contributed by each consumer would remain the same. Each citizen should pay through taxes for the benefit which he receives as a citizen, and should pay by water rent for the benefit which he receives as a consumer. To reason otherwise, and to carry such reasoning to its logical conclusion, would lead to the furnishing of free water to all citizens. If free water should be so furnished (as it is in one or two cities of the United States) we can see no reason why free electricity and free gas should not likewise be furnished by municipally owned lighting plants. The only businesslike method of conducting a city's affairs is to have every citizen and every department of the government pay for what it receives and receive payment for all services rendered.

AUTOMOBILES FOR POLICE DEPARTMENTS

At the convention of the International Association of Chiefs of Police, Chief of Police J. H. Haager, of Louisville, Ky., discussed the advantages of automobiles in police service.

In July, 1907, when he became chief, he found that two-horse patrol wagons were sometimes required to make round trips of five or six miles for a prisoner, which consumed an hour to an hour and a half and left the district in the meantime without patrol service; this requiring, in case of an emergency call, either that the return of the patrol wagon be awaited or that the reserves walk to the scene of action, except in such case as a street car was available. In March of that year Louisville was in a state of riot brought on by a street car strike, at which time the rioters took entire possession of the city. The Police Department was greatly handicapped because of the lack of proper facilities for reaching scenes of disorder and riot promptly. "In November of the same year another strike was declared and, profiting from observation of the manner in which the previous strike had been handled, I immediately hired fourteen ordinary automobiles, which were manned

During a recent street car strike Col. Haager was called up by telephone and informed that a large crowd of strikers and sympathizers were passing through an alley in the rear of the premises of the informant, evidently with the intention of attacking a street car two blocks away. This point was a mile from headquarters, but an automobile loaded with officers was at the end of the alley when the strikers emerged and, while it did not prevent a volley of stones and pistol shots, the crowd was immediately dispersed and 45 rioters were arrested.

"From the standpoint of economy the automobile has an advantage over the horse-drawn vehicle. Our patrol wagons equipped with horses, harness, etc., cost us in the neighborhood of \$1,800 each. Our automobiles cost us in the neighborhood of \$1,900 each. The average life of the automobile, if properly cared for, is just as great as that of the ordinary patrol wagon, and the automobile has the advantage that when it has outlived its usefulness in the Police Department, it may be disposed of for a considerable sum, while the worn-out patrol wagon is practically of no value.

"Again, the automobile is less expensive to operate than the



LOUISVILLE POLICE PATROL WAGONS. CADILLAC

by six plain clothes men each, with the result that they were able to slip up on the law breakers unnoticed. The rioters soon came to believe that every automobile that came in sight was loaded with detectives, with the result that demoralization was soon spread among their ranks." This experience taught Col. Haager the advisability of using automobiles about which there was nothing to distinguish them from others not used by the department.

Several classes of service rendered by the police, in which the saving of time effected by the automobile patrol was of great value, were cited by Col. Haager. Such was the quick response when telephone notification came at night for the presence of burglars; the police having been able in a number of instances to surround the house before the burglars left it with their loot, which would have been impossible had it been necessary to harness a horse-drawn patrol and rely upon the speed of the horses.

"The quick response of the automobile is a most welcome sight to a patrolman on many occasions when he has one or more unruly persons in custody. Frequently, during busy times, especially on Saturday night, when the horse-drawn vehicle was used, officers were compelled to stand with prisoners until the wagon had made runs in other parts of the district. This naturally causes a crowd to congregate and the officer's position became a defenseless, if not a dangerous, one. Our experience has been that we can make four long runs with the automobile in the time that it formerly took us to answer one long run with the horse-drawn vehicle. Think of this from a humane standpoint in hot weather."

two-horse patrol wagon. I find that our automobile costs us an average of \$18 per month to operate. This expense is apportioned about as follows: Gasoline, \$5; oil, etc., \$2; repairs and incidental expenses, \$11. Our figures show us that on city work it costs us 1½ cents per mile to operate our machines. In the operation of the two-horse patrol wagon it is necessary to have one and sometimes two extra horses to be pressed into service to relieve the regular horses when they become wornout from overwork or disabled from any cause; and during busy periods it is necessary to have two shifts of horses, each working twelve hours. Thus we have at least three horses to a wagon. When you figure oats at 56 cents per bushel, and pay your shoeing and veterinary bills, you will find that three horses cost you in the neighborhood of \$50 per month; a saving of \$32 in favor of the automobile."

Anticipating criticism of his allowance for repairs, Chief Haager states that his experience has been that the cost of operation and repairs depends largely on the men handling the machines. The Louisville department employed a practical mechanic experienced with automobiles and made him a Sergeant, his duty being to keep the machines in proper repair and to instruct careful men from the police ranks in the duties of a chauffeur. These men are selected for their knowledge of machinery and in a very short time become familiar with the mechanism and are able to make minor repairs; possessing the additional advantage of being men with police experience who can render police assistance if necessary. These chauffeurs receive the same salary as patrolmen.

HIGH PRESSURE SYSTEM FOR CHICAGO

Synopsis of Report Submitted by City Engineer Ericson—Data Concerning High Pressure Systems in Other Cities—Alternative Methods of Pumping and Costs—Water Necessary—Special Pipe Joints

A REPORT has just been submitted to Mr. John J. Hanberg, Commissioner of Public Works of Chicago, by City Engineer John Ericson, dealing at some length with the question of a proposed separate high pressure water system for fire protection in Chicago's downtown district. The data for this report were collected and the report prepared by Mr. H. S. Baker, Assistant Engineer, under Mr. Ericson's direction. The report is presented rather as a preliminary report, since final details of pumping machinery and piping have not been worked out; but the matter has been considered in sufficient detail to permit the preparation of an estimate of cost. In making up these estimates, the unit prices of the distribution system are based on costs of work done under similar conditions, and those of the cost of pumping stations of various types are made up from general sketches which we reproduce herewith. Concerning the matter of type of pump, the report states that it is not yet time to make a recommendation between the several types considered, but that study of the subject must be continued, especially by making actual investigation of the operation of these systems in other cities, it being believed that in no other way can practical ideas of the disadvantages and advantages of the various types be obtained.

"The report is submitted with the idea of starting discussion and bringing out the ideas of the various interests involved, but we shall not stop there—the time has come for action. . . . Chicago has dropped behind many other cities in this important matter of downtown fire protection. The cities now operating high pressure water systems include New York City (including Manhattan, Brooklyn and Coney Island), Philadelphia, Rochester, Newark, Providence, Toronto and Winnipeg. San Francisco is now considering a five million dollar system and Baltimore is about to start construction. This list is significant. Coney Island, San Francisco, Baltimore, all recall the great conflagrations of the past decade. It is no wonder that these cities are providing against the repetition of such calamities. Chicago has had her lesson, but the present generation seems to have forgotten it. Is it wise to wait for a second Chicago fire when the means of preventing it are available?"

The report takes up in detail the various districts of the city which need this additional fire protection. It states that while there are many fireproof buildings in the congested district, these are interspersed more or less with old buildings of ordinary or mill construction. A lumber district with a large frame district to the northeast of it offers considerable danger to the whole downtown district in case of a fire originating there. "The only conditions that will make the congested business district reasonably safe against large fires are fireproof construction of buildings and efficient means of extinguishing fires soon after they start. . . . The first is lacking to a large degree, while the fact that no great fires have occurred since 1871 shows that Chicago has a highly efficient Fire Department, for it is only by their continued vigilance and activity that such fires have been prevented.

Although the department is highly efficient and well equipped, if there is any better weapon to offer it for fighting fires it should have it. Within the past ten years systems of independent water mains and pumps giving high pressure have been installed and thoroughly tried out in a number of cities and have proved successful and economical. Thousands of owners of large buildings and industrial plants also have established similar systems on a smaller scale because increased investigation convinced them that the lessened fire risk and lower insurance rates would make a high pressure system a profitable investment. What has been done in other cities is shown by the table on the following page.

The subject of a high pressure system for Chicago has been

under consideration since 1903, when a commission reported on the subject proposing a central high pressure district in which almost every street was to be provided with a high pressure main 12 inches or larger, fed by three pumping stations having a total capacity of 30,000 gallons per minute. This commission also recommended connecting with this pipe system the sprinkler and standpipe systems installed in the larger buildings. No action was taken on this report, but in 1908 discussion of the subject was renewed, and in connection with a report for the Committee on Local Transportation to the City Council on the subject of transportation subways, a report on high pressure was made. Two plans were submitted, the first of which agreed substantially with that proposed in 1902. The second plan differed from this in respect to location of protected area, as the protection was extended over a larger area, but no mains were provided in the loop district proper. This plan was designed on the assumption that the loop district is filling up with buildings of fireproof construction, each equipped with its own high pressure system, which will act as a fire stop without additional protection, and the protection might better be located more on the outskirts of the high value district, to prevent attack by conflagration from without. This recommendation was in line with the policy in New York City, where the next extension of the high pressure system is to cover a portion of the east side tenement district, leaving the Wall Street district of high modern buildings to a later time.

The plan recommended in this report is called plan No. 3 and comprises a system of high pressure mains designed to accomplish the protection of both the present congested value district and also the outlying districts. Whatever the future may be, for the present the loop district is by no means entirely fireproof in construction, and it is believed that a high pressure system of mains carried through it will be useful not only for use by the Fire Department, but for feeding sprinkler and standpipe systems in the buildings supplied with these. Mains are therefore designed to run throughout this district and also in the territory surrounding it. It is suggested that it might be advisable to lay the first mains in the streets along the river for several blocks on either side and operate the system by fireboats pending the construction of a permanent station. It is not believed practicable or desirable to construct the entire system at once, but is thought preferable to extend the construction over a series of years, taking up the various sections in the order of their needs.

Before considering the structural details of the system the report discusses its operation and the financing of it. It is believed the Fire Department should be in absolute control of the system when at the fire. The cost of maintenance of the distribution system could be borne by the appropriations of the Water Pipe Extension Bureau. The operation and maintenance of the stations and of the system could be controlled and paid for by the Fire Department out of its regular appropriations, which would be rendered the more simple, since when the system is in full operation a considerable saving should be shown over the present expense of maintaining the Fire Department. High pressure systems have usually been built by the issuing of bonds. Winnipeg built its by special assessment against the property directly benefited. Chicago probably could not advantageously raise money by bond issues because of her approach to the bond limit, and it is proposed to finance the undertaking by special assessment against the property benefited. The amount of benefit in any particular district could be determined in a general way in the proportion to the reductions in insurance rates which the Underwriters are willing to allow. It is true that the benefits would not be confined to the district immediately protected, since the insurance against loss of daily work

DETAILS OF HIGH-PRESSURE SYSTEMS IN TWENTY CITIES

CITY	ESTIMATED POPULATION	DATE OF INSTALLATION	SOURCE OF PRESSURE	GALLONS PER MINUTE	MAXIMUM PRESSURE LBS.	LINEAL FT. OF MAINS	SIZES OF MAINS IN INCHES	Nº OF HYDRANTS	TOTAL COST OF SYSTEM	Nº OF ACRES	COST PER ACRE	CONNECTION WITH BUILDINGS	EFFECT ON INSURANCE RATES
ATLANTIC CITY	40,000	PROP.	1 STATION ELECT. TURB. PUMPS	7,000	225	38,590	8-14	82	\$187,272	306	\$ 612	STANDPIPES ON BUILDINGS	REDUCTION OF 30¢ PER \$1000
BALTIMORE	575,000	PROP.	PUMP STA.			75,900	10-20		* 397,999	360			
BOSTON	620,000	1898	FIRE BOAT	6,000	200	4,700	12	14	30,080	65	463		
BROOKLYN	1,400,000	1906	2 PUMP STA. ELECT. TURB. PUMPS	32,000	300		8-20		1,384,500	1,420	975		
BUFFALO	420,000	1897	3 FIREBOATS		300	12,756	12						
CHICAGO	2,229,000												
CLEVELAND	480,000	CONST.	2 FIREBOATS TO HAVE PUMP STA.	10,000	300	32,524	8-20	96	* 170,000	338		MAY HAVE CONNECTION WITH AUTO SPRINKLERS	REDUCTION OF 80¢ PER \$1000 PHOP.
CONEY ISLAND		1905-6	1 STATION GAS TRIPLEX PUMPS	3,600	150		8-16		90,000	147	612		REDUCTION OF 25%
DETROIT	380,000	1893	2 FIREBOATS	10,000	210	25,831	8-10	95		356	135	ROLLER FEED, ELEVATORS, AND SPRINKLERS NO OPEN CONNECTION	PROBABLY HAS PREVENTED AN INCREASE
FITCHBURG	33,000		GRAVITY*		180	28,250	8-16		50,000	346	144		PREVENTED AN INCREASE
HARTFORD	98,000	PROP.	1 STATION	10,000	300	53,430	8-24	198	796,277	731.3	1,089		
LAWRENCE	75,000	1906	GRAVITY +		134	10,200	10-12	39		120			NO CHANGE
MILWAUKEE	340,000	1889	3 FIREBOATS	15,000	250	45,717	6-12	183		630			10% REDUCTION
NEWARK	290,000	1905	GRAVITY	3,500	165	15,000	20-30	52	135,000	303	446	SOME CONNECTION WATER CURTAINS PROVIDED FOR	10% REDUCTION
NEW YORK *	2,100,000	1908	2 STATIONS ELECT. TURB. PUMPS	30,000	300		12-24	1,200	3,950,400	1,430	2,763		NO CHANGE
PHILADELPHIA	1,500,000	1903	1 STATION GAS TRIPLEX PUMPS	9,100	300	35,300	8-16	166	700,000	512	1,367	NONE ON OR IN BUILDINGS AUTOMATIC SPRINKLERS	PENALTY OF \$ 25% REMOVED
PROVIDENCE	200,000	1897	GRAVITY*	3,472	116	29,000	12-24	89	143,136	358	400		NO CHANGE
ROCHESTER	185,000	1874	2 STATIONS ELECT. TURB. PUMP STEAM TURB. TUR. PUMP	9,000	140	102,960	4-20					SOME CONNECTION CONSIDERING CONNECTION	GRADED REDUCTION
TORONTO	215,000	CONST.	1 STATION ELECT. TURB. PUMP	14,000	300	40,000	8-20		500,000	287	1,742		UNCERTAIN
WINNIPEG	110,000	1908	1 STATION GAS PRODUCER GAS ENG. TRIPLEX PUMPS	10,800	300	15,840	8-20		650,000	275	2,364	CONNECTION WITH AUTOM. SPRINKL. ELEVATORS	UNCERTAIN
WORCESTER	138,000		GRAVITY*		165	100,320	8-30			1,380			NO CHANGE

*Exclusive of Pumping Station and Equipment.

+ Manhattan

+ System consists of Extension of pipes from high service into district covered by low service.

* Board of Fire Underwriters have voted to reduce rates to the amount of 10¢ per \$1000 = A total of \$40,000 if extensions costing \$150,000 are made to the system

on the part of clerks and other employees would be one of the benefits conferred. Such benefits, however, could not be well stated in definite terms and probably could not be considered. It is suggested that the station buildings should be charged against the city at large, and that the distribution system be built by districts into which the area could be divided for this purpose, each district being assessed for its own system.

Several cities have complained that the carrying out of recommendations of the Underwriters has not been followed by decrease in insurance rates. This report, in discussing this question, cites the facts concerning other cities which have already built such high pressure systems.

In Philadelphia, when the downtown high pressure system was first constructed, a reduction in rates of 25 cents per \$100 of insurance occurred as a result of the increased protection, being the removal of a penalty previously imposed for insufficient water supply and fire protection. The extension of this system to form a complete gridiron in all of the streets of the protected area is now under way, and the Underwriters agree to grant a further reduction of 10 cents per \$100 of insurance on all property affected.

In Buffalo, a reduction of approximately 3 per cent is given in premiums on all buildings and their contents within 500 feet, street measurement, of a fireboat pipe line.

In the Borough of Manhattan, N. Y., district advances of 10 and 15 per cent, made previously on account of poor water supply, were reduced to 5 per cent; previous advances on piers were reduced from 25 to 5 per cent and on listed storage stores and private warehouses from 10 per cent to 5 per cent. Sprinklered risks had a previous discount of 10 per cent increased to 15 per cent. These reductions applied to the district directly protected by high pressure system.

In the Borough of Brooklyn, N. Y., risks located in the territory protected by the high pressure system had their rates variously reduced according to location, as, for instance, in District No. 1 (congested) a percentage advance of 10 per cent was removed, and in the remainder of the territory advances of 20 per cent and 25 per cent were abrogated.

When the high pressure system at Coney Island was completed and satisfactorily tested a reduction of 25 per cent in the rates was made.

In Boston there is one fireboat pipe line which has never been recognized by the Underwriters as a basis for rate reduction, on the theory that there is no pressure on the line except when a fireboat connects to it on signal.

In Cleveland there is quite an extensive system of fireboat mains, with an independent stationary pumping plant projected. A credit of 5 to 10 per cent is allowed on all risks situated within 500 feet of the streets of the outer boundary of the mains.

The cost of maintaining and operating the entire system of plan No. 3 except the fourth station is estimated to be not more than and probably less than the following:

Operating three pumping stations, including interest and depreciation	\$180,000
Interest on cost of distribution system, 4 per cent on \$3,000,000	120,000
Depreciation of distribution system, 2 per cent on \$3,000,000	60,000
Maintenance of distribution system	50,000

Total.....\$410,000

It is claimed that the insurance premiums in Manhattan have been lowered by \$500,000 annually since the construction of their high pressure system, and those in Brooklyn by nearly as much; and the area covered in Chicago by the system here out-

lined is greater than the combined area covered by the Manhattan and Brooklyn systems. In addition to this saving, a number of steam fire engines should be released from service in the downtown district to take the place of those which would otherwise be purchased for extensions in the outskirts of the city.

To permit various property owners to estimate their individual benefits from such a system, the report states that the assessment required to pay the cost of mains, valves, hydrants, etc., should not be more than \$5.50 per foot of frontage, this being based on assessing only the property abutting on streets where pipes are laid. The Fire Underwriters have promised a reduction of 5 per cent on all premiums where the property is protected by a high pressure system. If this is done and if the present annual premiums on the building and contents is equal to or exceeds the assessment to be levied against such property, or \$5.50 per front foot, the high pressure system would prove a profitable investment to the owner; this in addition to the advantage of the avoidance of uninsured losses, danger to life and to business and the expense of maintaining private fire pumps.

The report considers that "Any pumping plant designed for high pressure fire protection service must have the following qualifications:

1. *Reliability.*

The pumps must be in small units, so that a breakdown of one pump or any necessary shutdown will affect only a small portion of the station's capacity. The power must be as nearly unfailing as man can make it. Arrangement of piping and valves must be

so that outlets are in duplicate if possible. The water supply must be arranged so that it will not be cut off by any outside shutdown. The building must be so located and constructed that it is as nearly as possible proof against damage by fire or otherwise from without or within.

2. *Simplicity.*

Pumps should be of the simplest type possible, so that shutdowns for repairs will be infrequent, and they will always be in running order, even after a long period of disuse.

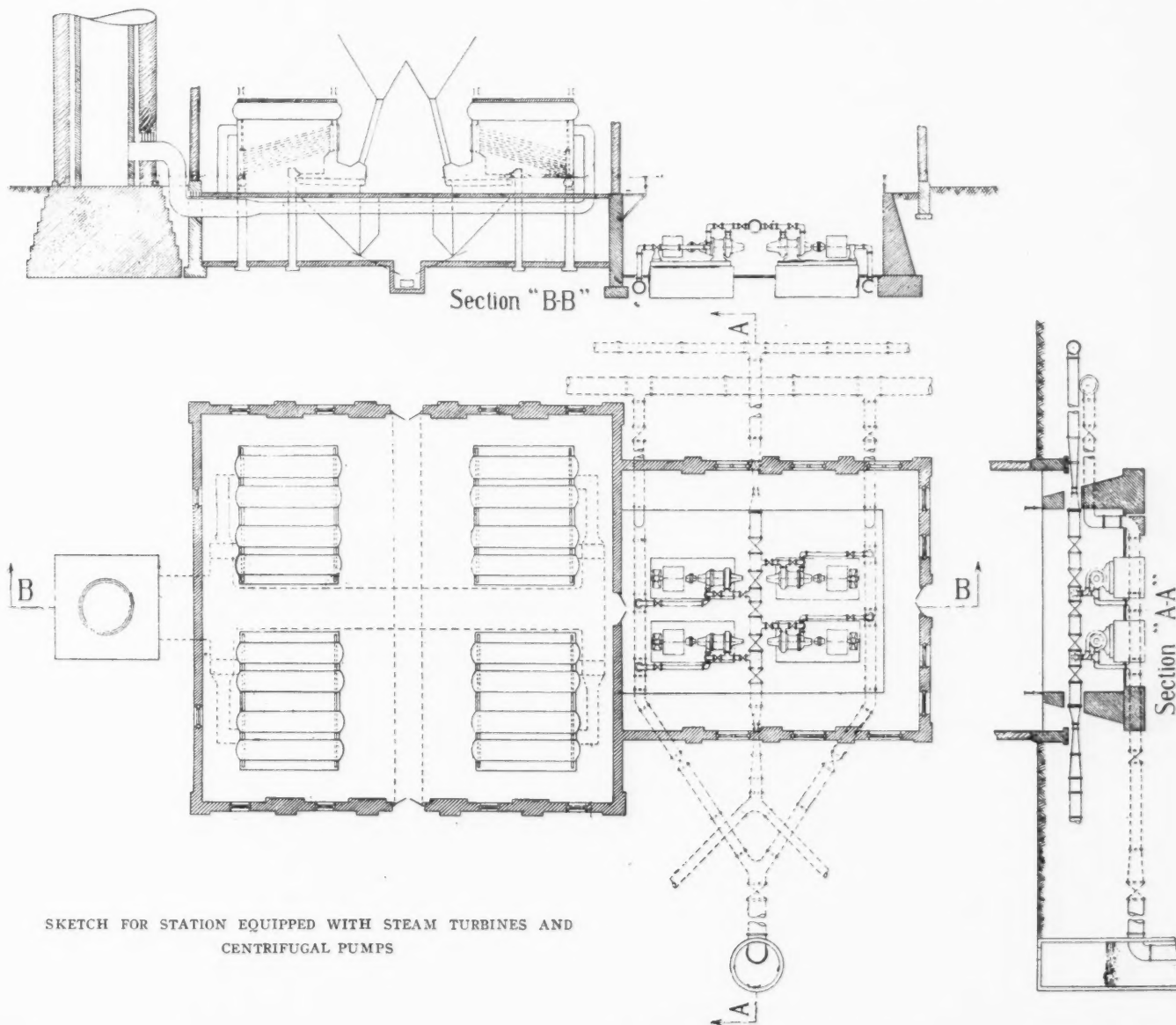
3. *Flexibility.*

The pumps must be capable of starting almost instantly and should be arranged, if necessary, with automatic control so that one pump will start up as soon as the pressure drops off and others will follow if necessary to keep up pressure on account of increased draft.

4. *Economy.*

The economy of a station of this kind is measured not by the efficiency of the pumps and engines or motors when running at full load, but by the annual expense of maintaining the station ready to run at part or full load, including interest on cost and depreciation.

As for type of pump, electric motors and centrifugal pumps are used in Manhattan and Brooklyn, steam turbines and centrifugal pumps have been proposed for San Francisco and are used in New York and Chicago fireboats and in the Toronto system; and gas engines and triplex pumps are used in Philadelphia, Coney Island and Winnipeg and are proposed for Hartford. It is believed that the station capacity should be at least 10,000 gallons per minute against 250 pounds pressure,



in units of 2,500 gallons capacity each. Four steam turbines of this capacity must be of about 550 hp. each and to operate these would require about 39,600 pounds of steam per hour, or 18 pounds per hp., which quantity tests of the Curtis turbine have shown to be necessary.

An estimate was made of the costs of constructing and operating stations using each of these types of pump and motor, as follows:

Approximate Estimates

STEAM TURBINE PUMPING STATION			
Cost of Construction			
Excavation:			
Pump pit.....	2,300 cu. yds.		
Boiler room.....	3,865 "		
Stack.....	565 "		
Conveyor tunnel.....	70 "		
	6,800 "	@ \$1.00	\$6,800
Concrete:			
Retaining walls for pump pit.....	616 cu. yds.		
Boiler room foundations.....	453 "		
Stack foundation.....	430 "		
Pump house foundation.....	101 "		
	1,600 "	@ \$0.15	112,000
Building:			
Pump room.....	60' x 54' = 3,240 sq. ft.		
Boiler room.....	78' x 84' = 6,552 "		
	9,792 "		
Assume 10,000 sq. ft. x 30' = 300,000 cu. ft. @ 15 cents.....			45,000
Foundations for pumps and turbines, 150 cu. yds. @ \$10.....			1,500
Four 2,500-gallon centrifugal pumps @ \$5,000.....			20,000
Four 600 H.P. steam turbines @ \$12,000.....			48,000
Boilers, 2,400 H.P. @ \$15.....			36,000
Chain grates, hoppers, conveyors, etc.....			15,000
Stack.....			8,000
Suction piping from city main and tunnel.....			6,500
Discharge piping.....			5,000
Steam piping.....			7,500
Condenser.....			6,200
Boiler auxiliaries, heater, purifier, pumps, etc.....			9,000
Two 20" Venturi meters and recorders.....			3,000
			\$228,700
Add 15%.....			34,305
			\$263,005
Operating Expenses			
Interest, 4% of \$263,005.....			\$10,520
Depreciation, 4% of \$263,005.....			10,520
Coal, 200 hours, 5 tons @ \$2.50.....			13,200
8,560 hours, 1/2 ton @ \$2.50.....			1,500
Oil, waste and supplies.....			2,500
Repairs.....			
Labor, men, cost per annum, three 8-hour shifts:			
1 engineer.....	\$6,600		
1 oiler.....	4,500		
1 fireman.....	3,000		
2 coal passers.....	5,400		
1 janitor.....	700		
			20,200
Total.....			\$58,440

GAS ENGINE STATION

Cost of Construction			
Excavation:			
Retaining wall.....	68,400 cu. ft.		
Main pit.....	58,089 "		
Engine foundations.....	5,096 "		
Pump foundations.....	7,056 "		
Tunnel.....	5,496 "		
	144,137 "	= 5,339 cu. yds. @ \$1.00	\$5,339
Concrete:			
Retaining wall.....	11,520 cu. ft.		
Retaining wall footing.....	23,040 "		
	34,560 "	= 1,280 cu. yds. @ \$7.00	8,960
Building, 82' x 79' = 6,478 sq. ft. x 30' = 197,340 @ 15 cents.....			29,151
Foundations for pumps and engines, 450 cu. yds. @ \$10.....			4,500
Seven 1,500-gallon triplex pumps, for 250 lbs. pressure @ \$8,900.....			62,300
Seven 300 H.P. gas engines @ \$10,000.....			70,000
Freight and erection.....			7,000
Suction pipes from city main and tunnel.....			6,500
Water discharge pipes.....			5,000
Gas connections.....			8,000
Air compressor plant.....			2,500
Gasoline tanks and piping.....			3,500
Two 20" Venturi meters and recorders.....			3,000
			\$215,750
Add 15%.....			32,362
			\$248,112
Operating Expenses			
Interest, 4% on \$248,112.....			\$9,924
Depreciation, 4% on \$248,112.....			9,924
Gas, 200 hours @ 18 cu. ft. per H.P. @ 85 cents per M.....			6,426
Labor:			
3 engineers @ \$2,200.....	\$6,600		
6 assistant engineers @ \$1,500.....	9,000		
1 janitor.....	600		
			16,200
Oil, waste and supplies.....			1,000
Repairs.....			1,000
Total.....			\$44,474

ELECTRIC MOTOR STATION

Cost of Construction			
Excavation:			
Pump pit.....	63,936 cu. ft.		
Retaining wall footings.....	8,640 "		
Pump foundations.....	2,048 "		
Building wall.....	1,692 "		
	76,316 "	= 2,826 cu. yds. @ \$1.00	\$2,826
Concrete:			
Wall of pump pit.....	15,264 cu. ft.		
Footings.....	7,892 "		
Building foundation wall.....	920 "		
Building foundation wall footings.....	392 "		
	24,405 "	= 904 cu. yds. @ \$7.00	6,328
Building:			
Pump room, 36' x 56'.....	= 2,016 sq. ft.		
Switchroom, 16' x 56'.....	= 896 "		
	2,918, say 3,000x30 = 90,000 cu. ft. @ 15c.....		13,500
Foundations for pumps and motors, 150 cu. yds. @ \$10.....			1,500
Four 2,500-gallon centrifugal pumps @ \$5,000.....			20,000
Four 600 H.P. 3-phase induction motors @ \$10,800.....			43,200
Suction piping from city main and tunnel.....			6,500
Discharge piping and valves in station.....			5,000
Switchboard and wiring in station.....			5,000
Two 20" Venturi meters and recorders.....			3,000
			\$10,628
Add 15%.....			16,085
			\$122,882
Operating Expenses			
Interest, 4% of \$122,882.....			\$4,915
Depreciation, 4.3% of \$122,882.....			5,284
Power bill:			
Ready to serve charge \$25 per k. w.....		\$37,500	
\$0.005 per k.w. per hour, 200 hours of full load.....		1,500	
			\$39,000
Labor—3 shifts:			
3 engineers @ \$2,200.....	\$6,600		
6 assistant engineers @ \$1,500.....	9,000		
1 janitor.....	600		
			16,200
Miscellaneous—oil, supplies, etc.....			1,500
Repairs.....			1,000
			\$67,899

MAINS, VALVES AND HYDRANTS

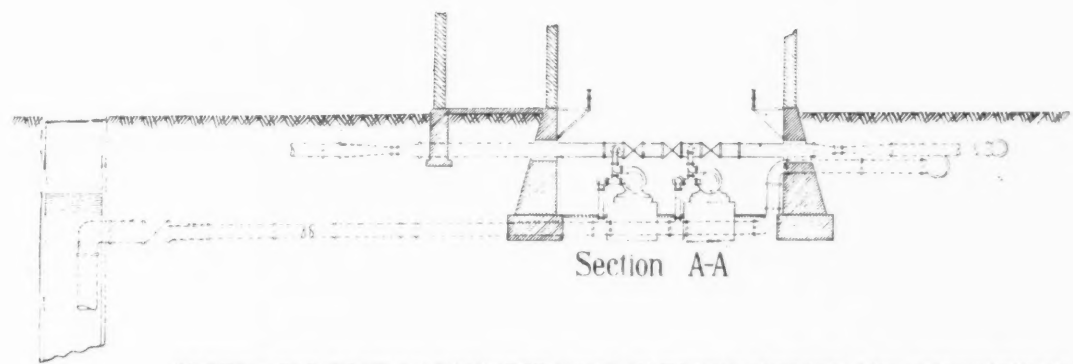
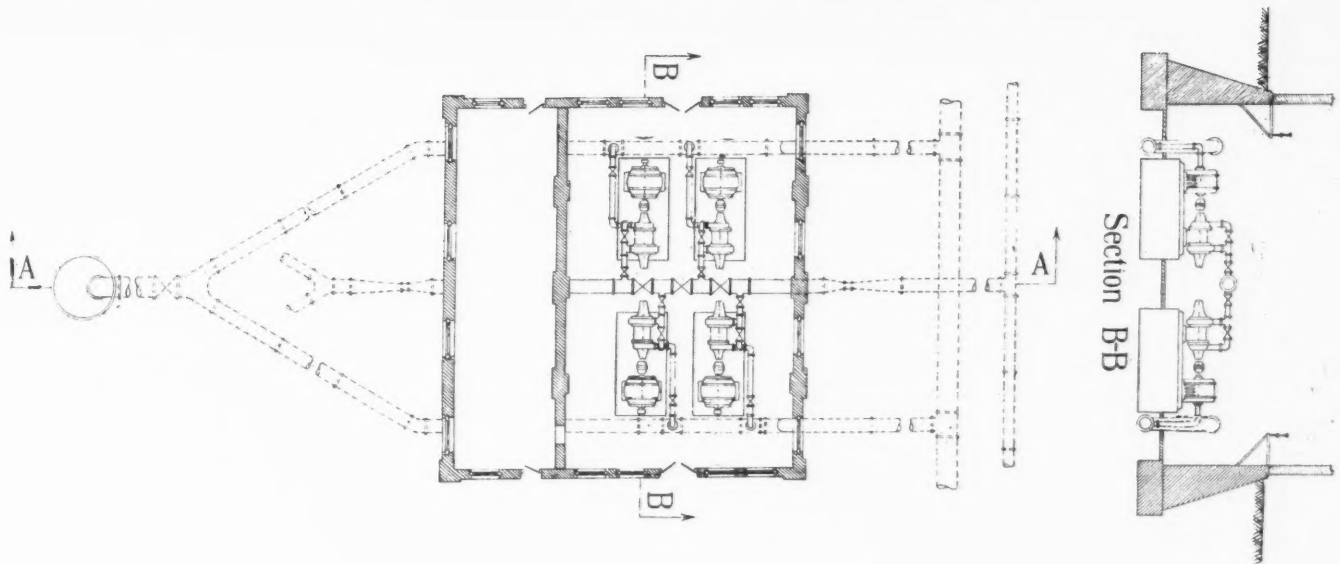
District	No	Cost
1.....		\$477,508
2.....		329,321
3.....		152,018
4.....		128,457
5.....		109,178
6.....		314,569
7.....		82,791
8.....		178,420
9.....		146,432
10.....		118,916
11.....		113,268
12.....		85,852
13.....		75,918
14.....		175,811
Total.....		\$2,488,459
Engineering and contingencies.....		373,269
		\$2,861,728
Four stations @ \$250,000.....		= 1,000,000
		\$3,861,728

NOTES

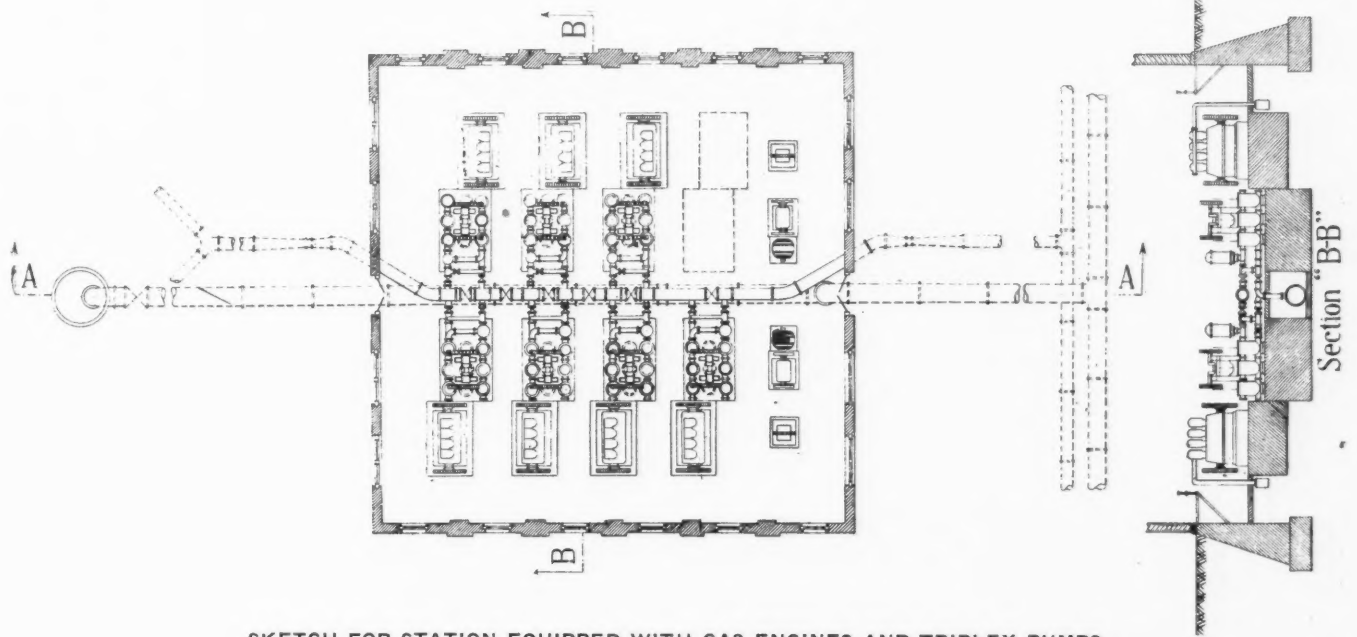
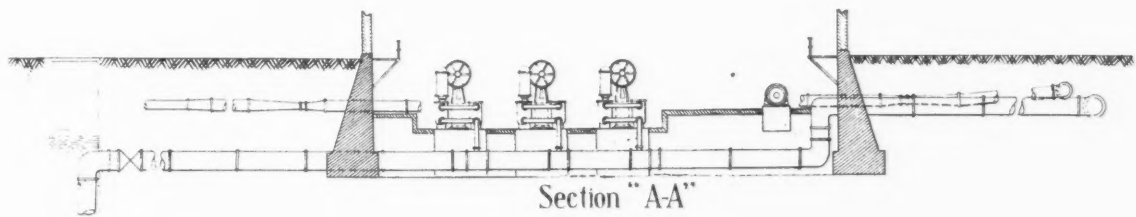
- No allowance made for land.
- River crossings are assumed to be made as follows:
 - North Branch in present Grand Ave. Water Pipe Tunnel.
 - Main river in proposed La Salle St. Pipe Tunnel to be built by Chicago Railways Company.
 - South Branch in present Harrison St. Water Pipe Tunnel.

The most common type of fire pump throughout the country is the standard direct acting duplex Underwriters' fire pump, which is made in four sizes designed to furnish, respectively, 500, 750, 1,000 and 1,500 gallons per minute against 100 pounds pressure at the pump. These pumps are not economical of steam, but they are rugged and strong and ready for instant use; simple and easily maintained, operated and repaired by any practical engineer. They usually rely for steam upon a boiler plant in the same building whose steam is in continuous use for manufacturing or similar purposes. For a high pressure system on such a large scale as is here contemplated, however, the problem is considerably different, and a special boiler plant would ordinarily be required.

The steam driven station has the advantage of not depending on any outside source for power, but both the construction and operation of a special boiler plant are costly. The gas engine station has the advantage of somewhat lower first cost, and no cost for power except while actually running. These engines have proved successful for high pressure pumping at Philadelphia, Coney Island and Winnipeg, and are operated in large



SKETCH FOR STATION EQUIPPED WITH ELECTRIC MOTORS AND CENTRIFUGAL PUMPS



SKETCH FOR STATION EQUIPPED WITH GAS ENGINES AND TRIPLEX PUMPS

TABLE OF COST DATA

NAME OF SYSTEM	Type	Pressure	Capacity, G. P. M.	Total Cost Except Distribution System	Annual Operating Expenses	Cost per 1,000 G. P. M. Capacity	Annual Operating Cost per 1,000 G. P. M. Capacity
Manhattan.....	Electric.....	300 lbs.	30,000	\$670,000	\$139,250	\$22,333	\$4,642
Coney Island.....	Centrifugal Pumps.....	150 "	4,500	47,000	14,186	10,444	3,152
Philadelphia.....	Gas Engines.....	300 "	9,100	260,000	11,978	28,571	1,316
San Francisco.....	Triplex Pumps.....						
Estimate No. 1	Steam Turbines.....	300 "	20,000	622,228	34,630	31,111	1,732
San Francisco.....	Centrifugal Pumps and Boiler Plant, Oil Fuel.....						
Estimate No. 2	Gasoline Engines.....	300 "	20,000	737,848	30,595	36,892	1,529
Hartford.....	Turbine Pumps.....						
Estimate No. 1	Rope Drive.....						
Hartford.....	Steam Turbines.....		12,600	257,620	45,320	20,466	3,597
Estimate No. 2	Centrifugal Pumps.....						
Chicago, Est.....	Coal Fuel.....		12,600	377,905	8,648	29,992	686
Chicago, Est.....	Gas Engines.....		10,000	263,005	37,400	36,300	3,740
Chicago, Est.....	Triplex Pumps.....		10,000	248,112	24,626	24,811	2,463
Chicago, Est.....	Steam Turbines.....		10,000	122,882	57,700	12,288	5,770
Chicago, Est.....	Centrifugal Pumps.....						

units at the Gary plant of the Indiana Steel Company. While such an engine relies upon an outside source for power if driven by illuminating gas, a failure in this supply is very improbable and yet is possible. To guard against this the gas engine could be run by gasoline; or a gas producer might be installed for manufacturing the gas. The latter, however, is open to the same objection as a boiler plant, that fires must be kept up and fuel consumed constantly to be ready for instant service.

A station driven by electric motors is also supplied from an outside source; but in Chicago there are so many generating stations that if all or several of these were connected by independent feeder cables to the plant, the electric power would be at least as reliable as the gas supply. In either case the cables might be burned out or the gas mains destroyed in a conflagration of great magnitude. The electric station is considerably cheaper in first cost, and the cost of operation is low except for the stand-by charge; and this charge might be kept quite low by special arrangement with the power companies.

Concerning the amount of water used for extinguishing fires the report refers to data from several cities. The following figures are taken from the Report of the New York Department of Water Supply, Gas and Electricity for 1905:

WATER USED FOR EXTINGUISHING FIRES—BOROUGH OF MANHATTAN		
Year	Total Gallons Used	Amount of Total that was Pumped from River
1900.....	60,258,679	27,955,325
1901.....	99,228,572	69,552,105
1902.....	49,032,542	16,136,150
1903.....	80,342,443	17,920,000
1904.....	81,191,779	23,721,059
Average.....	74,010,803	31,056,928
Daily average total for five years, 117,000 gallons.		

WATER USED FOR EXTINGUISHING FIRES—BOROUGH OF BROOKLYN		
Year	Total Gallons Used	Amount of Total that was Pumped from River
1900.....	50,126,363	22,584,630
1901.....	64,038,745	36,948,130
1902.....	38,827,222	13,797,420
1903.....	22,691,120	4,368,750
1904.....	42,844,391	17,355,710
Average.....	43,705,568	19,010,928
Daily average total for five years, 67,000 gallons.		

The following figures are taken from the "Report on Auxiliary Water System for Fire Protection for San Francisco" and include only a few of the largest of the fires enumerated therein.

Lynn, Massachusetts. Population, 55,727. Fire of Nov. 26, 1889, began at noon, burned uncontrolled 6 hours, burning 300 buildings. Loss, \$5,000,000. Max. rate of fire draft, 6700 gallons per minute. (This does not agree with figures for first 6 hours). Water used as follows:

1st 6 hours.....	3,000,000 gallons
1st 24 hours.....	8,000,000 "
2nd 24 hours.....	5,000,000 "
3rd 24 hours.....	3,000,000 "
4th 24 hours.....	2,000,000 "

Boston, Massachusetts. Nov. 28, 1889. Population, 400,000. Loss, \$4,000,000. Area burned over, 3½ acres. Max. rate of fire draft over ordinary draft, 20,000 gallons per minute. Water used for fire purposes, first 24 hours, 14,000,000 gallons; total, 24,000,000 gallons; 52 engines in use, furnishing 86 streams.

Milwaukee, Wisconsin. Oct. 28, 1892. Loss, \$4,500,000. Area burned, over 66½ acres. Fire draft, 12,600 gallons per minute; 8,600 gallons per minute pumped direct from river. Total, 21,200 gallons per minute.

Maximum number of streams supplied from water works system was 42, and in addition there were 24 streams supplied from the river. Total water used to extinguish fire, 8,750,000 gallons from water works; 750,000 gallons from river; total, 9,500,000 gallons.

Cripple Gate, London. Nov. 19, 1897. Loss, \$6,250,000. Fire started 1:00 P. M. and was under control at 8:00 P. M.; 51 streams at work. Total water used, 15,000,000 gallons, or 35,000 gallons per minute.

Baltimore, Maryland. Feb. 7 and 8, 1904. Burned area, 140 acres. Loss, \$75,000,000. Normal pressure from 50 to 60 pounds per square inch. Estimated that 70,000,000 gallons were used on the fire, and that during the week 122,000,000 gallons were wasted through broken service pipes. During the first few hours of the fire when it had a front of not over three blocks the force employed in fighting it was 280 firemen, including district chiefs, and 25 fire engines furnishing 50 streams with a combined capacity of 19,000 gallons per minute. At the height of the fire with a front not over five blocks in length the force working on it consisted of 1,073 men, 57 fire engines and 2 fire boats, having a total capacity of 50,000 gallons per minute. It was estimated that at this time 100 streams were in continuous service. Although the above force was ably handled by veteran firemen, they were only able to check the spread of the fire laterally to and against the wind. It burned onward in the direction of the wind to the waters' edge.

Philadelphia, Pennsylvania. The following data from the Annual Report of the Superintendent of the High Pressure Fire Service gives the amount of water pumped, the pressure and duration of each fire at which the system was used during 1906:

Date	Time Run	Pressure	Total Gallons Pumped	Average Rate Gallons per Minute
Jan. 9, 1906.....	1 hr. 54 min.	100 to 225 lbs.	136,800	1,200
Jan. 11, 1906.....	1 hour.....	250 lbs.....	294,000	1,900
Feb. 6, 1906.....	1 hr. 57 min.	250 lbs.....	572,500	4,900
Feb. 19, 1906.....	2 hrs. 9 min.	215 lbs.....	433,200	3,350
July 10, 1906.....	32 min.....	225 to 275 lbs.	94,600	2,960
Mar. 24, 1906.....	4 hrs. 26 min.	200 to 300 lbs.	1,360,000	5,100
Mar. 29, 1906.....	1 hr. 48 min.	275 lbs.....	282,000	2,620

The Committee of Twenty of the National Board of Fire Underwriters recommended for San Francisco that the system be arranged so that 15,000 gallons per minute be available for delivery on any area not exceeding 100,000 square feet within the congested value district, and this was adopted as the standard in designing the proposed San Francisco system. The area given corresponds approximately to one of the downtown blocks, and it is believed that a system for Chicago having the above capacity for delivery will effectually protect the area covered.

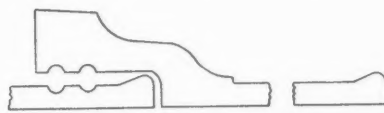
Situated as Chicago is, river water or lake water from the water front could be used for the entire supply; but considering the possibility of the connection through a private fire line between this and the mains for potable water, the greater injury which would be done to goods by dirty water than by clean and the greater convenience of operation, it is recommended that the regular city supply be used.

As previously suggested, the engineers believe it advisable to permit connections between private fire protection systems and the high pressure system. Winnipeg permits such connections; there are five such in Providence and the gravity systems of Newark, N. J., Worcester, Mass., and Fitchburg, Mass., have such connections. On the other hand, the systems of New York, Brooklyn, Coney Island and Philadelphia have no automatic sprinkler or standpipe connections. The objection usually made to such connections is that, should the piping of the buildings be broken by falling walls, etc., it would cause great loss of water and pressure and possibly put an entire section of high pressure mains out of commission. It is suggested by this re-

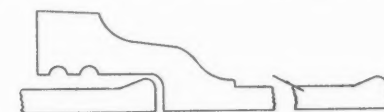
port that this could be overcome by placing a controlling valve in a brick chamber outside of the curb, its exact location with reference to prominent objects being given in a location book which would be constantly carried by those members of the Department who take care of the valves at fires. Even should this valve be covered by debris or rendered inaccessible, there would be required at the worst the shutting off of one block of main. Most large fires start in large, non-fireproof, unsprinklered buildings. The only way to make the congested dis-



STANDARD HIGH PRESSURE BELL AND SPIGOT



DOUBLE GROOVE BELL AND SPIGOT HIGH PRESSURE PIPE



DOUBLE GROOVE BELL AND REGULAR SPIGOT HIGH PRESSURE PIPE

STANDARD THICKNESS AND WEIGHTS
OF CAST IRON PIPE FOR FIRE LINES

800 FOOT HEAD 347 POUNDS PRESSURE					
NOMINAL DIAMETER INCHES	THICKNESS INCHES	POUNDS PER		APPROXIMATE WEIGHT OF JOINT POUNDS	APPROXIMATE WEIGHT OF PIPE PER JOINT
		FOOT	LENGTH		
6	.69	496	595	123	31
8	.80	75.0	900	158	44
10	.92	106.7	1,280	192	53
12	1.04	143.8	1,725	227	62
14	1.16	186.7	2,240	262	83
16	1.27	232.5	2,790	359	97
18	1.39	286.7	3,440	403	105
20	1.51	344.6	4,135	445	133
24				531	160
30				652	215
36				779	320

CITY OF CHICAGO
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
SKETCH SHOWING
THICKNESS AND WEIGHTS
OF
CAST IRON WATER PIPE
FOR
HIGH PRESSURE LINES
AND
VARIOUS JOINTS PROPOSED
June, 1909

SPECIAL DESIGNS FOR PIPE JOINTS

trict safe is to render all buildings safe; and it is argued in this report that all buildings not thoroughly fireproof should not only be permitted but should be compelled to connect automatic sprinklers and standpipes with the high pressure mains.

It is taken for granted that cast-iron mains with lead joints should be used, although special designs should be adopted for such joints, sketches of the several types being shown in the accompanying illustration. Where the mains are laid in special galleries in connection with subways or otherwise, properly coated steel pipes with screw or flange joints are considered preferable. Electrolytic action which would tend to destroy the pipe system can, it is stated, "be prevented absolutely by laying the pipes in conduits in the ground, by a careful electrolytic survey to be made previous to the laying of the pipes and by arrangements to be made by the street railway companies to do away with leaving currents wherever they may be found." Commendable emphasis is laid upon the desirability of keeping exact records of the location of all pipes, valves, connections and appurtenances to the system; also of recording all valve operations so that no valve may be forgotten and left closed which should be open.

As to the tightness of the high pressure mains, these should, of course, be tested section by section as they are laid. The method of making such tests in New York and the results obtained were discussed in the MUNICIPAL JOURNAL of February 27, 1907. Providence, R. I., had a special 16-inch fire protection main 5.57 miles long, which in 1900, when three years old, was tested by City Engineer Otis Clapp, and the leakage was found

to be at the rate of 2,487 gallons per 24 hours, which is 446 gallons per mile per day, or 0.22 gallons per foot of leaded joint per day; this under an average pressure of 114 pounds per square inch.

New York and Brooklyn have provided separate systems of municipal telephone to insure communication between the scene of any fire and the stations. It is argued in this report that in Chicago the fire alarm boxes are so well distributed and afford such good telephone communication with the stations, together with the Chicago Telephone Company's system, that it would be unnecessary to install an additional telephone system for use with the Chicago high service system.

PRODUCER GAS PUMPING ENGINES

AN effort to show the advance which has been made during the past five years in the results obtained by using producer gas in pumping water was made by Mr. D. Hastings Erwin in a paper read before the Association of Water Engineers of England in June of this year. While English fuel, machinery and practices differ in many respects from American, an abstract of this paper should contain many points of interest to American engineers. The paper was in substance as follows:

During the past five or six years it has been learned that not alone anthracite coal, but ordinary gas coke (which is perhaps the cheapest fuel and that most readily obtained), bituminous coal slack, sawdust and lumber yard refuse, peat, and even cotton seed and cotton cake can be used for fuel in producer gas plants. The writer presented the figures for a 300-h.p. gas engine driving a cotton mill and using a gas coke costing about \$2.87 per ton delivered, in which the average fuel consumption for the year averaged $1\frac{1}{2}$ pounds per h.p.-hour; and this engine was working considerably below its maximum capacity. At a water works plant where two 8-h.p. engines were using anthracite producer gas to drive by belt deep well pumps, 2.33 pounds of coal were used per 1,000 gallons lifted 235 feet. At another pumping plant $12\frac{1}{2}$ pounds of anthracite per hour lifted 3,000 gallons 145 feet. At still another pumping plant two 90-h.p. gas engines, operated by suction gas produced from anthracite, showed on test a brake h.p. of $76\frac{1}{2}$ and a water h.p. of 62; a consumption of anthracite of 0.664 pound per brake h.p. and 0.814 pound per water h.p.

At another plant, in which a steam plant used in 1907 was replaced by a producer gas plant early in 1908, the former used 96 tons of coal during September in raising 14,921,471 gallons of water, whereas the gas plant used 16 tons in raising 15,097,455 gallons. The coal in the second case was apparently of better quality, however, as it cost \$8.50 per ton, while that used in the steam plant cost about \$4.50 per ton. Even so, however, the cost for coal for pumping slightly more water by the gas plant was a little less than one-third the cost by steam. (No allowance is made for general expenses, maintenance, etc., in either case.)

An 18-hour test of 100-h.p. engines of the Sutton District Water Company showed 56.17 h.p. developed by the low level well pumps and 82.3 h.p. by the high level force pumps. The former used 0.6 pounds of coal per minute, or 36 pounds per hour in developing 56.17 h.p. The latter used 52.21 pounds per hour in developing 82.3 h.p. This is equal to 0.64 pounds of coal per pump h.p.-hour. The total lift was 400 ft. Another test of a 100-h.p. gas engine, using the best Welsh anthracite, showed 0.56 pound of coal per indicated h.p.-hour and 0.64 pound per brake h.p.-hour.

The author points out that the chief saving is in the fuel, but that cost of repairs is also less, while wages, oil and sundries are about the same. Among the points which will naturally occur to the water works engineer in connection with gas driven pumping stations generally is the small space occupied, small amount of attention required, and the absence of smoke and tall chimneys. The two latter considerations are very important where a pumping station has to be erected in a residential district.

MOTOR VEHICLES IN ENGLAND

In a paper read at the twelfth annual conference of the Institute of Cleansing Superintendents at Glasgow, Mr. H. Thomson Lyon, chairman of the Highways Committee of Westminster, described the use of motors in the Street Cleaning Department of that city, from which paper we present the following abstracts:

The city owns eight motors, seven of these being steamers and one gasoline. The steamers have rubber tires on the driving wheels only, the other on all four wheels. Four of these machines are kept in repair by the department and four by annual contract. The first pair of rubber tires to be used are not yet worn out, although having been in service about a year and one-half and having covered approximately 16,000 miles. These machines are used at night for soaking the streets preparatory to flushing, and in the daytime for sprinkling. The gasoline machine is used for collecting house refuse. The first motor was bought in 1900, and was two years old at the time, but is still in serviceable condition and would bring a fair price.

Mr. Lyon makes what he considers a conservative comparison between motors and horses as follows: "For street watering the motor is equal per shift of $2\frac{1}{2}$ horses and $2\frac{1}{2}$ men; for dust collection the motor is equal per shift of $2\frac{1}{2}$ horses and one man; that is to say, the horse for dust collection has the advantage of the additional number of drivers employed who can act as fillers also. (The 'dust' referred to is the mixed household refuse collected from the English 'dust bins.') At the same time the advantages of the motor for speed in clearing shop streets, where the collection has to be effected with great rapidity, are undoubted." He cites one business street where, between 9.15 and 10 o'clock a. m., 300 cans are emptied, which would be almost impossible with horses. Trailers hauled by the motors are very common and convenient. They can easily be left at some suitable corner, where they are picked up after the motor-wagon itself is filled and used for receiving additional amounts.

The city finds the ordinary machine brooms not sufficiently large to utilize effectively the power of the motor and is considering the question of procuring a larger type of broom.

In order to utilize the motors more fully they are made with interchangeable bodies. The interchange is made by means of a fixed ledge at the back of the shed or a trestle and a sling from the roof. The body is raised by means of the tipping screw until it takes a bearing on the back ledge and is sufficiently high to enable the sling to be hooked onto it. The screw is then lowered and the motor draws out and backs under the other body. The change can be effected by the driver, single handed, in six or seven minutes.

As stated above, the first rubber tires used on motor wagons by the city were put in service in 1907, and Mr. Lyon believes that this was the first city in the country to employ rubber tires. One of the disadvantages of horse-drawn vehicles as compared with motors is stated by the writer to be the fact that horses, during the service, add to the litter which the machines themselves are used to remove.

EXCESS SPEED ALARM FOR MOTOR VEHICLES

The London Times Engineering Supplement describes an automatic mechanism which is being brought out by an English manufacturer in order to meet the forthcoming regulation to be issued by the Metropolitan Police, to the effect that mechanically propelled vehicles will be required to be provided with a device to give audible indication whenever the legal limit of speed is exceeded. The apparatus consists of a gong mounted on the car and arranged so as to be struck by a rotating lever which flies outward into contact with projections on the gong when the speed of the vehicle is excessive, the lever being actuated from the shaft or other moving part of the engine. The mechanism can be adjusted to suit any speed of engine, size of wheel or speed limit, and when once adjusted it can be sealed by the authorities.

STREET ILLUMINATION

In a recent article in the *Electrical Review and Western Electrician*, Dr. Louis Bell discusses some principles of street illumination, endeavoring to point out some of the defects of the methods now employed and the principles which should govern their remedies. He begins with the assumption that "the fundamental purpose of street lights is to illuminate the streets to a degree adequate for the purposes of their use." One which is crowded in the evening should be sufficiently light to enable one not only to find his way, but to read house numbers and signs, recognize acquaintances, etc. Those used mainly as residence streets do not need such bright lighting, although even in these there should be no difficulty in finding one's way and noting any irregularities in the sidewalk; also sufficient to prevent night prowlers haunting them unobserved. In sparsely settled districts he believes that even this amount is not necessary, but that the lights should be merely marks of the way to enable the passerby to avoid obstructions and determine his whereabouts.

A common method of effecting these differences in illumination is by different spacing, rather than different candle-power of lights. The former method results in a series of bright spots separated by wide, dark spaces which seem the darker because of the occasional lights. This introduces the much-discussed question of large units versus small. "Of two streets, both lighted up to a good working value of the minimum, there is absolutely no doubt that the better effect is produced by the street in which there is the greater flux of light, provided that the sources of light are not too dazzling. In other words, to be thoroughly well lighted a street should have both a high minimum and a high average. With small units there is a tendency to secure the specified minimum with the longest possible average. The advantage of the large unit with somewhat increased spacing is that the average is held high." Small units cost more per unit of light flux than big ones of similar efficiency.

As to what the minimum referred to should be, Dr. Bell believes that the figure set by Mr. Voysey, of London, $1/10$ foot-candle measured by the horizontal component taken four feet above the pavement, is about right for a really well-lighted street. None of the standard arc lamps used in this country will give this if the space between them is much in excess of 100 feet. But even one-half this minimum, if there be a high average, can give fully satisfactory results. In Cannon Street, London, the average is about 0.6 foot-candle. In certain cases like important public squares a higher minimum than 0.1 foot-candle is desirable.

Since powerful arcs are more efficient than small ones, strong illumination can as a rule be obtained more economically with the former; another argument pointing in the same direction being that, once the spacing of lights is established, especially where there is underground wiring, the change in the spacing of the arcs is expensive. The author favors tungsten incandescent lamps for street lighting, especially where trees line the streets. To relieve the intense glare caused by the high-power arcs, the opal globe is desirable. A very thin opal globe greatly diminishes the shadows near the lamps as well as reduces the glare.

Bright illumination should not be confined to the streets containing the more valuable business properties, but the amount of nocturnal use should be the criterion, and the police value of the lights should be considered. For outlying suburban streets and roads Dr. Bell recommends the smaller sizes of incandescents down to 50 or 40-watt tungstens. These small lamps are expensive relative to the foot-candle obtained, but as a mere marker at the corners of the blocks they serve the purpose, although the illumination, except near the lamp, is of no particular service.

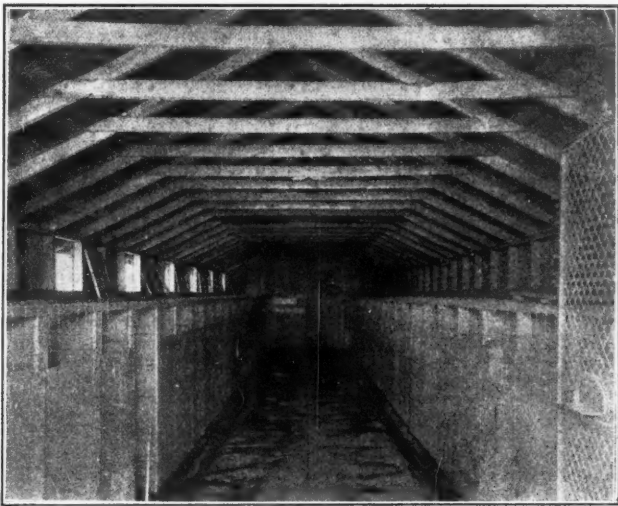
"We in this country have been getting behind the game in street lighting and it is time to be up and doing. The new and efficient arcs and incandescents give an opportunity for getting greatly increased illumination with very little extra

cost. Cities must bear their part by assuming the work of proper distribution of lamps, and they might with great advantage take a hand in putting up more artistic fixtures, especially in parks and important streets. Those now in use are too often cheap and ugly as well as ill-placed. The useful mast-arm, for instance, as too often put up, is about the shabbiest looking thing imaginable, and one finds in conspicuous places in parks some of the most atrocious fixtures that it ever entered into the mind of man to design."

DENVER'S DOG POUND

(From *Denver Municipal Facts*.)

DENVER has perhaps the most up-to-date dog pound in the West. It is located at 2929 Fir Street and is just four blocks north of the Park Hill car line. The chief dog license inspector is B. Plessner. The pound master is Walter C. Cox. The main building of the new pound is devoid of all frills on the outside, but the interior, while plain, embodies a theory which is entirely new. It is a frame structure, nearly 70 feet long by about 20 feet wide, with individual kennels, or rooms, partitioned off to accommodate 50 dogs at one time.



INTERIOR OF DOG POUND

The entire floor inside the building is of concrete. There is a broad passageway down the center, and on either side the separate compartments are built in long rows. The smaller rooms are 4 feet long and 22 inches wide, while the larger ones are 4 feet long and 27 inches wide. These compartments, which face on the runway, have a concrete floor, which slants down to a drainage canal in front so that the whole building, individual rooms and all, may be thoroughly washed at one time with a hose. The front, sides and back of the compartments are of painted wood, and at the top of each is a wire screen for ventilation. Persons in search of a lost dog may walk along the center passageway and see into each room to identify their pets without opening any door or taking any chance of coming into contact with the imprisoned dogs.



DOG IN PRIVATE COMPARTMENT

But the dogs are not required to lie or sleep on the cold cement floor. There is a wooden bench, upon which they may rest, which is fastened to the back of the kennel with hinges and which can be raised and hooked back against the wall when the place is being washed out. Another novel and sanitary feature is an individual tin in each stall in which the dog is fed and watered.

Thus it is impossible for a sick or diseased dog to spread infection when sequestered in a private room. It eliminates all chances for a fight, too, as no dog comes in contact with another one. The most dainty or delicate pet runs no risk of catching the mange or distemper from a poor tramp from the streets, thus securely housed in its own private room. Each room is numbered, and the city's guests, as they arrive, are roomed and registered.

The gas chamber where the unclaimed dogs are destroyed is also a new device, and death is instantaneous and painless. A small stove generates a sulphurous gas which is turned into the death chamber. When the room is sufficiently filled with this vapor the dog is taken through an open door, and in the twinkling of an eye is overcome. Then the carcass is carried out by the dead animal collector. The whole process is humane.

TRENTON'S EXPERIENCE WITH AUTO APPARATUS

TRENTON, N. J., was the first city east of the Alleghenies to think seriously of the auto as an adjunct to the Fire Department. As early as four years ago an order was placed for a self-propelled machine, but after a year's waiting the order was cancelled, as the manufacturers considered such a piece of fire apparatus as a novelty and could not fulfill order. The Fire Board shortly afterward purchased a 10-hp Stanley Steamer for the use of Chief C. S. Allen. This car showed itself superior in all tests, and the following year a 30-hp combined chemical and hose wagon was secured. This year an order has been placed with the Webb Company for an engine which will be delivered September 1. If this proves satisfactory another of the same type will be obtained. The cost of maintaining the two Stanley Steamers has been estimated at \$250 a year, while horse-drawn apparatus of the same type costs \$650. The repairs have been small. A new boiler costing \$85 has been added to the chemical, which has never been out of commission for a day, and the only repair to the Chief's car was the replacing of the front tires last month, after two years' service. The original cost of the Chief's auto was \$850 and the chemical \$2700; the cost of the horse-drawn apparatus would be \$300 for the Chief's carriage and \$3,000 for a chemical engine. The efficiency of these autos is seen from the fact that out of the 395 fires which occurred last year all but two were put out before any great damage was done, and neither of these two would have resulted in so much damage had the alarm been rung in promptly. The total damage for the year was about \$36,000, these two fires claiming \$24,000, the remaining \$12,000 being spread over 303 fires. This small loss is accounted for by the fact that the autos are on the scene of the fire before it has fairly started. Another feature of the cars is a powerful searchlight which enables the firemen to work with advantage at night.

CINCINNATI'S DAYLIGHT ORDINANCE

THE Council of Cincinnati, O., has passed unanimously a so-called daylight ordinance, and several other cities are considering similar action. Cincinnati's ordinance may therefore be of interest. It is as follows:

Whereas, The health and physical welfare of the people of this community can be greatly enhanced if the activities of life begin early in the day, as nature intends; and

Whereas, In order to accomplish such results it is desirable to adopt a standard time in advance of the standard time now in use, with the object of promoting a more extended use and enjoyment of daylight during the summer months; and

Whereas, In consequence of this change no railroad will be compelled to change a single schedule, nor any factory its hours of work.

Now, therefore, be it ordained by the City Council of the City of Cincinnati, State of Ohio:

Section 1. That from and after 2 o'clock in the morning of the first day of May of each year until 2 o'clock in the morning of the first day of October in each year, the standard time shall be one hour in advance of the standard time now in use.

Section 2. This ordinance shall take effect and be in force from and after the first day of January, 1910.

Treats Lake with Tar Along with Road

Minneapolis, Minn.—The Park Board intended to oil Calhoun boulevard two weeks ago. And it did the day before the big rain. That was Tuesday. It was Wednesday evening that bathers noticed oil on the lake. It was Thursday they noticed it more. It was Friday they found they'd have to go out in the middle of the lake if they wanted to go in for a swim. Not only was the lake surface coated with oil, but very tar-like oil. Tar soap is advised as part of a Calhoun bather's equipment. The bathers are not the only people who are complaining. Residents along the boulevard say the sticky, tarry dope is tracked into their homes from the boulevard, and they declare their rugs and floors are ruined by it. Also the automobile people are kicking. They say the oil ruins their tires. Superintendent Wirth says all the oil will be absorbed by the roadway in a day or two. But he doesn't say how soon the dope will vanish from Lake Calhoun.

Pavement Ordinance in Wilmington

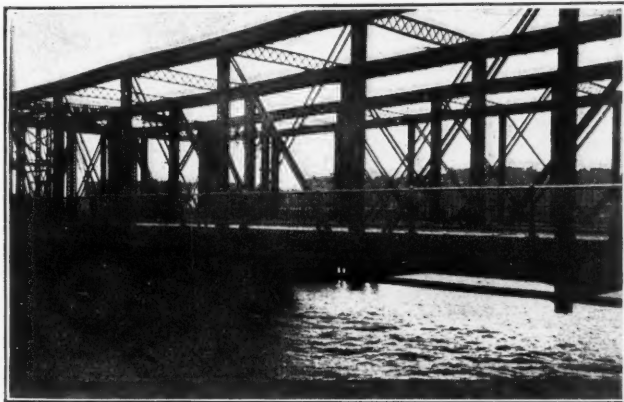
Wilmington, Del.—The Street and Sewer Directors have passed an ordinance requiring property owners to use cement for pavements so that the city shall have a uniform system of paving. All plans for paving must be inspected by the Street and Sewer Department and approved by that body.

Road Law of Pennsylvania Changed

Harrisburg, Pa.—The State road law of April 12, 1905, was radically changed by amendments during the recent session of the Legislature, and the act as it now stands means much more work for the Road Supervisors of the various townships. It provides "that within six months after the passage of the act the Board of Township Supervisors shall measure all public roads in their respective townships; such measurements shall be made either by the use of a cyclometer or otherwise, as the Board may direct, and they shall report the number of miles of road in such township to the State Highway Commissioner." This provision is imperative and the six months within which the roads must be measured will expire November 13, 1909. The other provisions of the act do not go into effect until the beginning of 1910. This amending act appropriated \$500,000 for carrying out the provisions of the act for the fiscal year beginning June, 1910. The road tax will hereafter be collected in cash, and no tax will be worked out; but any township may by a majority vote authorized by the Court of Quarter Sessions, at the February election, after 30 days' notice, adopt the system of payment of road tax by work on the roads; no township shall receive in any one year more than \$20 for each mile of road in said township. Roadmasters must report to the Supervisors once a month, or as often as they require, the nature, location and cost of the work performed. Such Supervisors are not prohibited from overseeing and working on the roads themselves instead of employing roadmasters.

New Bridge Gives Short Cut for Heavy Trucking

Boston, Mass.—The new bridge to South Boston has been finished and thrown open to traffic. It affords a short cut to wagons between the shipping district of Boston and the manufacturing districts of South Boston. The traffic carried is heavy and the roadway is paved with granite.

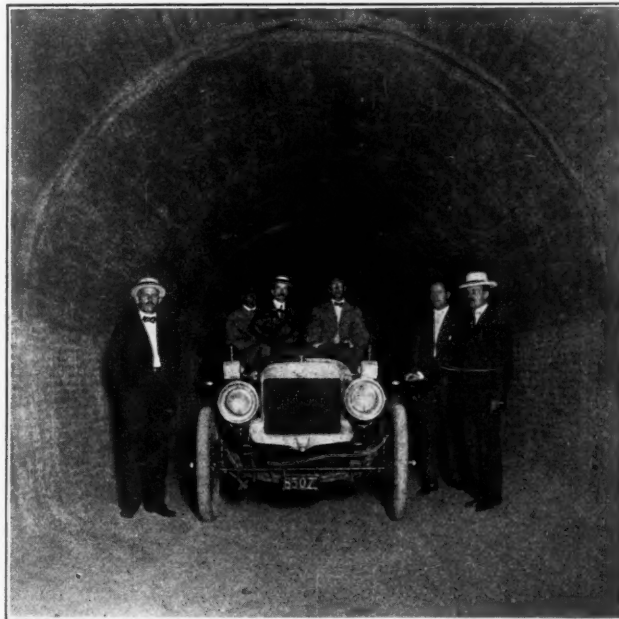


NEW BOSTON-SOUTH BOSTON BRIDGE

SEWERAGE AND SANITATION

First Automobile Tour Through Sewer

Baltimore, Md.—Spinning along in automobiles through a gigantic tube far under the city and guided only by the lights from powerful searchlights, Governor Austin L. Crothers, Mayor J. Barry Mahool, members of City Council, engineers, city officials and others, numbering one hundred, made a unique automobile trip July 29. The trip was one of six miles, through the new outfall sewer of the sewerage system from the heart of the city to Back River in the eastern suburbs. The party first inspected the disposal



Courtesy of The Baltimore News.

AUTOMOBILE PARTY OF PUBLIC OFFICIALS IN SEWER.

plant and then the sixteen big machines slid down the incline to the tunnel, which is 12 feet wide and 8 feet 4 inches high, leaving ample room for the autos, and they covered the six-mile stretch in forty minutes. The M. A. Talbot Company, the contractors, were the hosts, while Calvin W. Hendrick, Chief Engineer of the Sewerage Commission, officiated as a chauffeur, as shown in the photograph.

To Exterminate Flies by Spraying Breeding Places

Indianapolis, Ind.—A crusade in real earnest against the house fly has been started by the city Board of Health. A large supply of garden sprays for spraying deodorants has been received, and inspectors will be sent forth to make conditions unpleasant for the flies. For several weeks the inspectors have been locating the breeding places of flies, and a record of all these is now on file in the board's office. It is the intention, as far as possible, to spray these places with a mixture of pennyroyal and coal oil. The work is in the nature of an experiment, for until this year no systematic steps have been taken to eliminate flies.

Hunting Germs in Auto

South Bend, Ind.—State and city health officers are touring St. Joseph County in an automobile and making a rigid inspection of the dairies, in the hopes of discovering the causes for the typhoid fever epidemic which has held sway in South Bend during the last month. As there are more than 100 dairies to visit, the tour will take over a month.

Individual Drinking Cups on Trains

Topeka, Kan.—The Board of Health has won the first round in the scrap with the Board of Railroad Commissioners over the common drinking cup on the passenger trains in Kansas. The Board of Health found that several cases of infectious diseases were spread on account of the use of the common drinking cup, so an order was issued to stop its use and remove it from the trains. The Railroad Commissioners claimed this would be an impairment of the service, but the Attorney-General said if the Board found the cup spread disease it should abolish it.

WATER SUPPLY

Model Filter Plant Ends Usefulness

Niagara Falls, N. Y.—Engineer W. D. Robbins, City Bacteriologist Dr. Horton and Eugene Cary have inspected the model plant of the Municipal Filtration Company on Third street which was put out of commission recently. The charcoal, sand and paraphernalia of the plant were minutely examined, with the result that something less than an inch of mud and other matter was found adhering to the screen through which the water percolates in course of filtration. An official report of the inspection will be made. The plant was inaugurated last January. During the seven months of its running it was cleaned out by a slow process. Twelve tests were made of the water by the City Bacteriologist and in each case the findings showed that the percentage of pure water was above the 90 mark. The screen over the charcoal was cut previously, and the mechanism of the apparatus laid bare to the eyes of the inspecting officials. Engineer Robbins and Dr. Horton made a descent into the sand pit and closely examined the formation of the matter on the screen. It was noticed that two kinds of sand were in use. One lot came from Seagirt, N. J., while another consignment was from Minnesota. The latter is a deep brown color, and it was originally intended to use only that kind. The stock fell short, and it was necessary to get some of the New Jersey brand. The mixture caused some little confusion when it came to deciding as to the presence of the mud above the screen, as the Jersey sand is of a dark hue. Fully 3 feet 3 inches of sand is used in the process of filtration.

Water Too Muddy to Be Metered

Niagara Falls, Ont.—At a meeting of the Water Works Board the startling information was given out that "Niagara Falls water contains too much dirt to be measured by meter." The matter was brought under discussion by the complaint of the Dominion Suspender Company, which is charged \$72 per year for water for its factory. The company does not think that it uses such a large amount of water as would justify this charge, and suggested that a meter be installed to register the consumption of water and that it be charged by the thousand gallons. This was pronounced to be impracticable by the Water Commissioners, because sediment in the water clogged the meter and rendered calculation by this method impossible.

"Wets" Oppose Wells as "Germological Gardens"

North Vernon, Ind.—The "wets" and "drys" of this city are engaged in a peculiar contest over the opening of four public wells, which are designed to take the place of fifteen saloons that will go out of business in a few days. The "wets" oppose and the "drys" favor the opening of the wells. The "wets" have appealed to the Board of Health to prevent the Council from acting, alleging the water will be dangerous to the public health. Temperance advocates assert that the youth of the town and the country can go to the public wells and drink to their capacity without danger, while the "personal liberty" exponents are convinced that the opening of the wells means the public establishment of "germological gardens."

Sediment Taken Out of Reservoir by Dredge

Washington, D. C.—Maj. Jay J. Morrow, the engineer officer in charge of the District water supply system, has reported to the War Department the exhaustion of the available appropriation of \$13,000 for the removal of sediment from the Dalecarlia, or receiving reservoir. This sediment had been accumulating for many years, and not only affected the purity of the water supply, but also interfered with the proper operation of the service. The construction of a dredge in the reservoir was found necessary for the removal of the deposits. Maj. Morrow reports that 110,600 cubic yards of material were removed by dredging, and that the existing project is completed. In addition to the dredging operations, it was found necessary to construct retaining banks and to repair the pavements on the reservoir banks which had been damaged by the dredging. The only extra work now in progress is the building of wing walls at the southern connection of the reservoir.

Kansas City to Soon Possess Water Works.

Kansas City, Kan.—The city expects to take possession of the water works plant of the Metropolitan Water Company August 15, the City Clerk having been notified of the acceptance by Trowbridge, Niver & Company, of Chicago, of the bonds for \$1,097,850.63 issued for the purchase of the water works plant. Another issue of nearly one-half million dollars has been made for improvements. Under municipal control the water works will be managed by a non-partisan board until next April, when they will come under the recently adopted commission government.

Wants Explanation of Heavy Midnight Consumption

Dallas, Tex.—Officials of the Water Department want to know why it is necessary to keep the pumps going at nearly full speed after midnight, when the consumers are asleep. Between the hours of 12 midnight and 6 a. m. about 2,000,000 gallons of water are pumped into the mains out of a total daily pumpage of about 11,000,000 gallons. All factories will be inspected, to ascertain whether pipes supposed to be for fire protection are used for service purposes. An ordinance is now pending before the Commissioners requiring all consumers of artesian water, whether for fire protection or other purposes, to install meters.

Water Supply Inspection by Associated Charities

Lexington, Ky.—Since the question of the city's water supply has been up for discussion the Associated Charities, through the general secretary, L. W. Mahn, and his assistants, has made a brief and hasty canvass of some of the more neglected sections of the city, in order to ascertain by actual count what are the real conditions and needs. The figures reveal some very startling conditions in various sections of the city. Under the heading of springs, wells and surface water, it is found that many are using water from springs which drain from the hillsides or from wells which find their supply from the drainage of the soil impregnated with filth, there being no sewers in these sections; and hence the waste and drainage of the soil is allowed to find its way into these springs. In other places water is being used from the open runs, or creeks, which are in reality nothing more than open sewers. This, of course, is used for washing clothes and dishes and for scrubbing, but not for cooking, etc.

The summary of this investigation follows:

Total number canvassed, 582 families (counting 5 to the family); 2,910 consumers.
 Number families using cistern water, 361; 1,805 consumers.
 Number having hydrant in house, 8 families; 40 consumers.
 Number carrying hydrant water, 240 families; 1,200 consumers.
 Number not using hydrant water, 334 families; 1,670 consumers.
 Number using cistern and hydrant, 68 families; 340 consumers.
 Number using surface water (including springs, wells and creeks), 71 families; 355 consumers.

Those who carry water are obliged to pay for the water from 25 cents to 60 cents per month from those who have the hydrants on their premises, and carry it a distance of from twenty-five feet to four blocks.

STREET LIGHTING AND POWER

New Globe Needed Every Day in Week

Columbus, O.—In a petition numerous signed by citizens, the Board of Public Service has been requested to restore a light which until recently had been in service at Short avenue and Liberty street. Superintendent Gamper, of the Light Department, in reporting on the matter, stated that this was a very dark corner, but that it had been necessary to remove the light, as the department had been compelled to put on a new globe every day, notwithstanding that the police had been asked several times to apprehend the persons who destroyed the lamps. The petition signers have been notified by the Service Board that the light will be placed at once, provided they are willing to guarantee that the lamp will not be destroyed.

City Light and Water Plant Pays

Grand Island, Neb.—According to a report by William Gilchrist, an expert accountant of Omaha, Grand Island's municipal water and light plant pays well. The total receipts of the light plant for the last year were \$25,055, and for the water plant \$25,049. The light plant showed a profit of \$6,789 and the water plant \$3,824. Liberal allowances were made for depreciation.

City Gas Works Has Increased Revenue

Alexandria, Va.—The annual report of the city gas works, as submitted to the City Council, shows that during the year about 41,000,000 feet of gas were used, and that the increase in revenue over that of last year was \$1,158.52, and that not more than \$200 in bills is owing to the works at the present time. Mr. Uhler, Chairman of the Light Committee, explained that the electric light works had not hurt the gas works, insofar as revenue was concerned, in the least.

Galvanized Arches to Replace Iron Ones

Galveston, Tex.—F. M. Lege, who designed the electric arches for Galveston and has worked out details making it possible to recommend a beautiful arch at a very nominal cost, states that, owing to there being a difference of only \$5 for galvanized arches in place of black iron arches, he most emphatically would recommend the installing of galvanized arches. He states that on account of the severe climatic conditions the black iron pipe, even though it be painted, will rust excessively within six months' time and would mean that all the arches would have to be scraped and repainted. The thickness of the pipe, however, would make them last for a number of years, but the cost of painting would be approximately \$5 each, which would mean that within six months' time the difference between a galvanized arch and a black iron arch would more than pay for itself; furthermore, the galvanized arch would make a much better appearance than a black iron painted arch.

Lebanon Enlarges Her Light System

Lebanon, O.—City Electrician William Carson is busy erecting the new incandescent lamps purchased by the Board of Public Affairs for the purpose of lighting alleys and other places not reached by the arc lights. At present these points are lighted by the ordinary incandescent lamps of 16 and 32 candlepower, which have to be turned on and off by persons living near the place at which they are located. In this way the lamps often burn until late in the morning when in the summer months they could be turned off as early as 3 o'clock. The new lamps are the most modern tungstens, and are of 80 and 40 candlepower. They are being wired in series, so that they can be turned on and off with the street lamps. Owing to this fact and to the nature of this variety of lamp, about one-half of the current heretofore used will be saved, and better light will be obtained. The new lamps are placed on handsome brackets and are equipped with large porcelain-lined shades.

Public Service Commissioner Against Municipal Gas

Minneapolis, Minn.—City ownership of a gas plant is a luxury which few cities can afford, says Edward M. Bassett, a member of the New York Public Utilities Commission, who has been visiting Minneapolis. "I do not wish to say that the city would not be justified in taking over the gas plant, but, in my opinion, few American cities have reached a point in their development where they can operate such works without a loss," said Bassett.

City Current for Cluster Globes Installed by Citizens

Tacoma, Wash.—Property owners along Pacific avenue are getting up a petition to the City Council asking that the current be turned on again in the cluster lights installed by the property owners about a year and a half ago between Ninth and Eleventh streets. The lights on C street are kept burning by the city, but those on the avenue have not been lighted for several months. Most of the lamps burned out long ago, and it is proposed that the property owners replace all such globes with new ones, and that the city again supply electric current with which to light them. Some arrangement will also be made, if possible, with the Council for the city to keep the lights cleaned and in repair. At present they present a dirty appearance and are but little ornament to the street.

Light Plant at Terrell

Terrell, Tex.—The city lighting plant of Terrell is ready for operation excepting the large flywheel for the power house engine. The first one shipped was broken and another ordered, which is delaying the starting of the new city plant.

FIRE AND POLICE

Master Tennessee Fire Law

Nashville, Tenn.—Fire insurance companies are gradually working out the problems resulting from the laws passed by the last Legislature. Of the fifty-six towns in the State which have water protection, thirty-five are to get the benefit of co-insurance features, and a reduction of rates is consequently predicted. Heretofore the co-insurance clause has only applied to Nashville, Memphis, Chattanooga and Knoxville. There are fifty-six Tennessee towns with water protection, but only thirty-five have Fire Departments and sufficient equipment to warrant granting this privilege. The three-fourths value clause is being applied to all other points in the State. The full quota of deputy marshals has been named and the State is being covered by them every week, all fires being investigated. The county sheriffs are also taking increased interest in their work.

Citizens May Give Fire Alarms

Penn Yan, N. Y.—The Fire Board has placed in front of both engine houses boxes containing keys to the buildings. The boxes were so placed as to enable any person in case of absolute knowledge of fire, and in the absence of police officials or firemen who possess keys, to break the glass, take the key and gain entrance to the fire house and give the alarm. A fine of \$25 will be imposed for violation of this rule or tampering with boxes.


How and Where to Turn in an Alarm

Washington, D. C.—The District Commissioners have given their endorsement to a recommendation of F. J. Wagner, Chief Engineer of the Fire Department, for the placing of cards giving instructions for pulling fire alarm boxes in the homes and offices. As shown below, the card, which contains a reproduction of a fire alarm box, tells what to do

IMPORTANT

IN CASE OF FIRE the nearest FIRE ALARM BOX is located at
LOCATION OF THE NEAREST FIRE BOX TO YOUR HOME SHOULD BE PLACED IN THIS SPACE

To send in an alarm break glass on outside door, turn key, open door, and then pull down hook once and let go, as shown by cuts below



REMAIN AT THE BOX UNTIL ARRIVAL OF FIRE DEPARTMENT

If telephone be available, call Main 6,000, give your address. Street and Number, and say your house is **AFIRE**

PENALTY FALSE ALARMS, \$40

INSTRUCTIONS TO WASHINGTON HOUSEHOLDERS

in case a fire breaks out, and shows the proper manner for turning in an alarm. The card is the idea of one of the fire captains, and is intended to save time in getting the fire apparatus on the scene, for, as is generally known, there is much delay in notifying fire headquarters of a fire, as few know exactly what to do, and it is desired to familiarize them with the proper mode of operation.

Rubbish and Fires

New Bedford, Mass.—At least one benefit has been noticed from the recent fires in this city, in that the Police Department has served notice on business men in the south end of the city that they must keep their rear yards and alleys clean from any substance that might possibly start fire either by spontaneous combustion or which might easily be ignited and carry the flames to the nearby houses. The business men all heartily endorse the plan of the police, and have started to co-operate with them as far as possible in doing the work immediately. In the most congested section of South Water street it has long been realized that if a fire once received any headway the rubbish in alleys between houses would serve as a ready means to transport flames.

Fire Plugs for Every Corner in Dallas

Dallas, Tex.—A fire plug on every corner in Dallas and, when the blocks are long, a fire plug in the middle of the block, is the goal to which the Water Department of the city is, in its several endeavors, working. "It is the purpose," R. R. Nelms, secretary of the Water Department, said, "to install in Dallas a hundred water plugs per annum. That number was placed last year, and will be placed this year. It is intended to place the water plugs on every corner and when a block is over 500 feet long it is intended to put a plug in the middle of the block. This should be a great saving to the Fire Department. It will not make necessary, as it so often is at present, the laying of long lines of hose. It will save the hose from the high pressure to which, in the residence fires, it is now subjected. Granted that there is a pressure of a hundred pounds on a line of hose 1,000 feet long, at the open end of that hose the pressure will not be more than twenty pounds. Of course, the reduction in pressure is due to friction, and friction wears a hose rapidly. Each section of hose costs \$50, or thereabouts. The Department will proceed immediately with the installation of the hundred fire plugs which are to be placed this year.

New Fire Nozzle Will Do the Work

Eddystone, Pa.—Council has decided to accept the patent nozzle for the fire company. The new portion of the apparatus was tested and was found to be capable of throwing a stream of water 300 feet high. There is a 150-pound pressure on the plugs in the borough and with the new nozzle it was found that the hose could be easily handled by one man. Another good thing is that there is an attachment to the nozzle whereby the water can be shut off without running all the way back to the plug.

Firemen Test New Hose

Racine, Wis.—The Fire and Police Committee of the Council met to witness the testing of 700 feet of new fire hose. The hose is guaranteed to stand a pressure of 400 pounds to the square inch and each length of fifty feet was subjected to this pressure. All of the hose stood the pressure perfectly and will be placed in service at once. The balance of 300 feet which was ordered from another company as an experiment has not yet arrived.

Police Must Light Lamps—Firemen Serve as Police

Sharon, Pa.—Harold Snyder, the borough lamplighter, resigned last week and it was decided to have the policemen look after this work, thus saving the borough the salary of the office, amounting to \$540 per year. Alderman Buckley said it would be cheaper in the end to hire another lamplighter, and let the police attend to their proper duties, but the other members could not see it in this light and President Spence remarked: "If you need extra men, call on the firemen."

More Inspections of Fire Department

Steelton, Pa.—Steelton's Fire Department will hereafter be inspected twice a year and all the members of the various companies will be obliged to turn out with their equipment. At present fire alarms are so infrequent that when the Department is called out defects in the apparatus are found for the first time, and sometimes this leads to serious trouble. Fire Chief Grove recommended at least two inspections—one in June and one in December—and on a motion of Mr. Nelly the Ordinance Committee of Council has been ordered to draw up such an ordinance.

City to Rebuild Old Fire Engine

Washington, D. C.—A plan for getting a new fire engine for the District at two-thirds the cost of a new one has been suggested to the Commissioners by T. M. Robinson, Superintendent of Machinery of the Fire Department, and Commissioner Macfarland has approved the plan. Superintendent Robinson recommends that the reserve second-size Clapp & Jones engine be rebuilt and a new boiler be put in. The engine was first put in service November 18, 1889, but its capacity now is only one-half of what it was rated at during its early days. "The rebuilding of the engine referred to," explained Fire Chief F. J. Wagner, in forwarding the recommendation to the Commissioners, "will give the Fire Department a practically new and up-to-date steamer at an approximate cost of \$3,250, while a new engine would cost approximately \$5,500."

Approves Shooting at Fast Autos

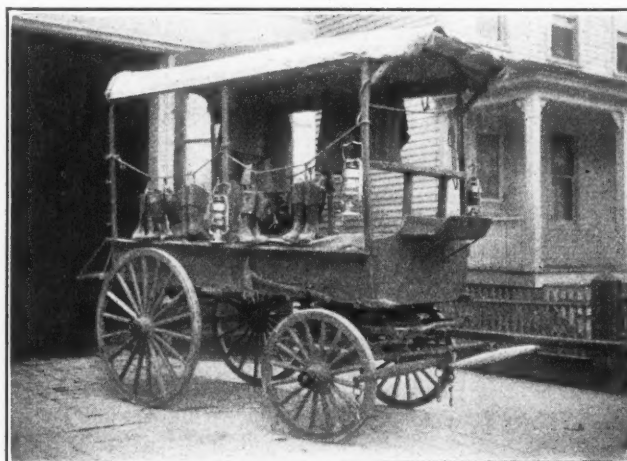
Providence, R. I.—The members of the police automobile squad are to use any means possible to make automobilists who insist in breaking the speed laws stop their cars. This was announced in effect by Police Commissioner William H. Luther, who said that the Police Commission had completely exonerated Motorcycle Patrolman Lewis H. Hall for shooting at the tire of an automobile driven by Joseph P. Bowles, of Pawtucket. Commissioner Luther said the man was doing his duty.

Paid Fire Chief and Engineers for Passaic

Passaic, N. J.—A paid Fire Chief for Passaic, engineers in the houses and extra men there, too, has been decided upon by an ordinance which passed the City Council creating such positions. The volunteers will be replaced. The ordinance creating a captain of police at \$1,200 and two detective sergeants and one desk sergeant at \$1,000 each also passed. Gustav Schmidt is to be police captain.

Extemporized Hose Wagon

Woodhaven, N. Y.—Because their hose wagon has had to be sent to Brooklyn to be fitted with new springs, and because the New York Fire Department has not at present a spare hose wagon to be substituted for the one undergoing repairs, the members of the Deraismes Hose Company, of the Woodhaven Volunteer Fire Department, have had to hire a furniture truck and equip it as shown in the accompanying



IMPROVISED HOSE WAGON OF NEW YORK SUBURB.

illustration. The hose is coiled up in the bottom of the wagon. The improvised fire wagon has been fitted with swinging harness, and is drawn by two fine horses that ordinarily draw the regular apparatus. As it speeds along the street on the way to a fire, swaying from side to side, it is a peculiar and wonderful thing to behold. At first the Deraismes fire laddies had it in the front part of their headquarters, on Union place, Brooklyn Hills, but so many comments were made that it has now been placed in the very back of the house, behind the steam fire engine.

Trolley Truck for Fire Fighters

Reading, Pa.—At a meeting of the Firemen's Union W. W. Wunder called attention to the fact that there are frequent calls for the services of Reading companies at fires in outlying towns and boroughs. He suggested that a committee be named to see the traction company and endeavor to have them construct a low flat trolley car on which there could be placed an engine and wagon, and thus transport the apparatus to fires. A motion prevailed that the officers of the union constitute a committee to see the traction company relative to the matter.

Police Force Reduced in Interest of Economy

Kansas City, Kan.—In order to make the current expenses meet the revenue of the city, Mayor Guyer has found it necessary to reduce several of the departments of the city from time to time. Another demand for retrenchment has been made, and twenty patrolmen were requested to turn their stars and clubs over to the Chief. By dropping the twenty men from the city payroll, approximately \$1,500 can be saved every month.

GOVERNMENT AND FINANCE

Baltimore Audit Work Slow and Expensive

Baltimore, Md.—The work of the American Audit Company on the accounts of the departments of the city government has been going on since May 22, when Mayor J. Barry Mahool gave the company the contract, and the work in three departments is well under way. The first department entered was the Comptroller's. As soon as additional men could be brought from other offices of the company the auditors entered the office of the Collector of Water Rents and Licenses and the City Collector, where they are still at work. The books of the Commissioners of Finance were investigated, but, being small, it only took a few weeks to complete the work, and an audit of the books of the City Register's office was made after the arrest of W. F. Downs, and the report was placed in the hands of the Mayor and City Council, the charge for the work being more than \$2,000. Never before has there been a complete audit of the city departments, and the Mayor, in recognizing this, told the audit company to begin with his own administration, two years ago. The pay for the auditing is fixed on a time basis, and the length of time is surprising the city officials. The cost was estimated at about \$30,000 by a number of officials some time ago, but the estimate is now placed beyond that figure.

Calls on Bank to Pay City Interest

Baltimore, Md.—The Commissioners of Finance have passed a resolution calling upon the City Collector to instruct the National Mechanics' Bank that hereafter the city demands 2¼ per cent interest on the average balance held in that depository of funds from the City Collector's office. A statement from the City Collector's office shows that the average balance at the National Mechanics' Bank from that office was \$81,897 for each month, which is estimated will give the city an additional revenue of \$2,500 annually. The attention of the Mayor had been called to the fact recently that while in past years the account of the City Collector, as segregated from the account of the Mayor and City Council, had been such an active one that it did not pay the banks to give interest on the average deposits. Now, however, conditions have changed, and, as the statement from the City Collector's office shows, a considerable average balance remains at the bank the year round.

Resigns from Council to Advocate Commission

Birmingham, Ala.—Two Councilmen, B. H. Cooper and G. H. Estes, have resigned, and it is believed by many that the resignations are due to the strong fight being made for the commission form of government. Both are strongly for the commission, and will probably go to Montgomery to assist in the effort to have it passed.

Submit Reports or Be Fined and Suspended

St. Paul, Minn.—Mayor Daniel W. Lawler has sent identical letters to eight city departments in which attention is called to a section of the city charter requiring an annual report to be made to the Mayor by the second Tuesday of April each year. All the officials express feelings approaching consternation, some saying they were sent to them by mistake, and all declaring emphatically that they had sent their reports within the specified time. The letters refer to sections 568, 569 and 570 of the city charter, whereby failure to send a full report to the Mayor, giving an account of all transactions, receipts and disbursements, shall be punishable by a minimum fine of \$100 or a minimum sentence of thirty days and suspension from office.

Organized Opposition to New Charter

Taunton, Mass.—An organization is being perfected and a campaign planned in opposition to the new charter to be voted on by the citizens at the next election. Those in the movement do not claim that it is impossible to make an improvement in the charter under which the city is now being governed, but they do not consider the draft that was put through the Legislature on the 1909 referendum is an improvement, and so are urging its rejection. To have it accepted, they say, would place the city in the position of having a form of government which they do not believe is a practical and wise one, and which would stand in the way of getting a new and more thoroughly considered scheme for next year or the year following.

Proposed Features of Knoxville's New Charter

Knoxville, Tenn.—Among the features of the new charter to be voted on by the citizens August 7 are the following:

Makes the associate members of the Board of Public Works active instead of advisory, by requiring a division of the labors of the Board among the three members, and requiring them to give their entire time to the discharge of their duties.

Makes the Board of Health a charter body, with ample powers to protect the health of the city and guard it against pestilence, to inspect all foods and supervise all quarantines, make all sanitary regulations and do everything necessary to safeguard and protect the health of the city and its people.

Provides for municipal ownership of a lighting plant and garbage crematory, as well as of a water works plant.

Provides for a Sinking Fund Commission and a sinking fund to maintain the city's credit.

Makes the Recorder and City Treasurer, City Attorney and City Comptroller, now elected by the Board of Mayor and Alderman, elected by the people.

Provides for municipal ownership of underground conduit systems for all wires and authorizes the city to lease the same for compensation and gives the city power also to require all wires to be put underground.

Gives the city power to regulate charges for gas and electricity, meter rents and telephone rents.

Requires city funds to be deposited in banks that give the city the best terms after competitive bidding.

Provide for a modern system of bookkeeping, whereby the state of any particular fund or appropriation may at once be determined and by approval of vouchers, fixing responsibility for all expenditures.

All present officials to serve out their terms or hold over to September, 1910.

All officials and employees forbidden to accept free passes or other gratuities.

Direction of legislation by the people is provided for by initiative, referendum and recall.

Registration books are made public records.

Notice of personal injuries received required to be given the Mayor in thirty days before the city can be held liable.

Codification of city ordinances required.

All grants of franchises to be subject to the referendum.

Franchises to be limited to thirty years.

Gives civil service in all departments of the city government.

Appropriations cannot exceed revenues.

Preserves Water Works Commission and authority to issue \$1,250,000 to "buy or build" water work bonds.

Hutchinson Likes Commission Government

Hutchinson, Kan.—Mayor F. L. Martin, who was elected last April and is the first Mayor under commission government, says that the records show that the city has done more business since April than could possibly have been done under the old system. The Commissioners have let contracts for some street paving and for fifteen miles of sidewalk and curbing. They meet twice a week in the daytime, and the meetings are conducted like any business meetings.

Leaders Favor Commission Government

Muskogee, Okla.—An effort has been started by Grant Foreman, leader of the Republicans of the City Council, to call an election providing for a change in the city charter, providing for a commission form of government. There are four Republicans and four Democrats in the City Council, and the Mayor is a Democrat. It is believed the Mayor and his four Democratic colleagues will defeat the resolution in the Council, unless the Republicans modify their demand so that the new charter would be effective at the end of the present administration.

New York Tax Rate Fixed

New York, N. Y.—After President McGowan, of the Board of Aldermen, had threatened them with fines for neglect of duty under a charter provision, the Aldermen passed the resolution fixing the tax rate at \$1.678 on the \$100 for Manhattan and the Bronx. The rate for the boroughs is slightly higher, owing to different county taxes. The rate shows an advance of 7 on the 100 on the current year's rate of \$1.61. The rates since 1904 have been: 1904, \$1.41; 1905, \$1.51; 1906, \$1.49; 1907, \$1.47; 1908, \$1.48; 1909, \$1.61. The rate is expected to bring into the city treasury \$117,145,889. The amount in the general fund for the reduction of taxes is \$34,231,062.

REFUSE COLLECTION AND DISPOSAL

Special Valves for Patent Water Carts

St. Paul, Minn.—The four automatic street flushing carts acquired by the city last year are not being used, while fire hose has been brought into service again, as the Water Board objected to the use of fire plugs for filling the street flushers, on the ground that by the daily use of them the valves would be injured and might leave the downtown district without protection in case of a fire. City Engineer L. W. Rundlett has thus been forced to get his own valves to attach to hydrant. Twenty-four valves have been ordered.

Cost of Keeping City Clean

Columbus, O.—It costs the city over \$10,000 per month to sprinkle and sweep the streets, or about \$350 per day. The report of Superintendent Condon, of the Street Cleaning Department, gives the expenses of his department at \$10,621.88 for one month, while the receipts amounted to only \$37, derived from renting two street sprinklers.

Paper Nuisance in Bayonne

Bayonne, N. J.—The Board of Health has decided to cover its ten garbage wagons, at a cost of \$500, in order to remedy, if possible, the "paper-in-the-streets" nuisance. Mayor Pierre Garven says the trouble from paper blown from the garbage wagons amounts to practically nothing; that the placing of paper on the top of garbage cans is largely to blame. There is an ordinance prohibiting such use of a garbage can, he said, but when an attempt is made to enforce it it is always the "the other fellow" who puts the paper in.

Garbage Collection Problem to Be Solved by Two Boards

Dayton, O.—An official invitation of the Board of Health asking the Board of Public Service to join with the members in getting a solution of the garbage collection problem has been received by Clerk William A. Budroe. The missive came from Clerk Winton L. Miller, of the Health Department. The Health Board asks cooperation toward inducing the people to use the regulation receptacle. Conditions of alleys as noted by the Health Department's sanitary policemen and Health Officer Goodhue were cited. The servers will likely accept the invitation and a conference may be called within a short time.

Better Garbage Service Demanded in Pensacola

Pensacola, Fla.—Hereafter when complaints pile up in any considerable quantity and number with the City Marshal for failure on the part of garbage wagons to take up trash properly placed on the street line, City Marshal F. D. Sanders, by resolution of the Board, will call private teams, give them instructions where to find and where to deposit any offal thus collected, and the Board of Works will instruct that an amount equal to such bill be deducted from the check for the contractors. The action was prompted by a book filled with numerous complaints of neglect of the wagons to move trash in all parts of the city. The Clerk was also instructed to write each of the contractors a letter cautioning him to give better service or else suffer a forfeiture of bond and cancellation of contract, either or both of which the Board may do.

Grand Jury Recommends Night Street Cleaning

Philadelphia, Pa.—Recommendations that the present system of cleaning streets in the business sections of the city be abolished, and that all the cleaning, instead of a limited part, be done at night, have been made by the Grand Jury in its final presentment to Judge Carr. The suggestion was made that from March 1 to November 1 the principal streets be cleaned between 11:30 o'clock at night and 6:30 o'clock in the morning, and that from November 1 to March 1 the hours for cleaning extend from midnight to 7 o'clock in the morning. These suggestions, the jury explained, are in the interest of health and morals.

Must Sprinkle at Night

Schenectady, N. Y.—Notice has been sent out by the Bureau of Water Supply, Department of Public Works, prohibiting the use of city water for the sprinkling of lawns, excepting between the hours of 10 p. m. and 4 a. m. The order went into effect immediately. Consumers violating the order, if detected, will have their water supply shut off.

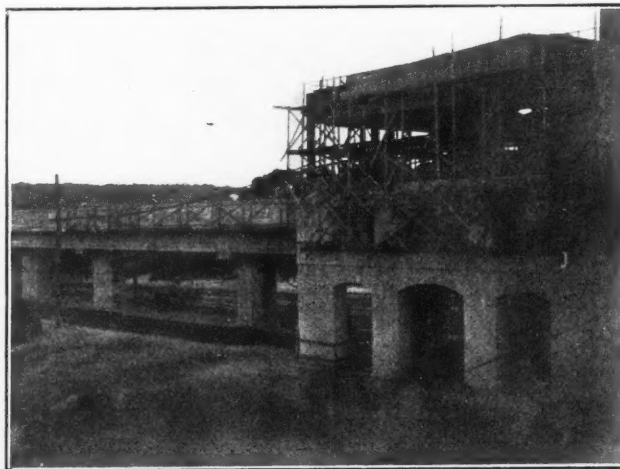
RAPID TRANSIT

May Forfeit Its Franchise

Defiance, O.—Although the Ohio Electric Railway has the necessary material stored in its yards in this city, the company is not making any move toward keeping its agreement regarding the building of its tracks within the city limits. The Board of Public Service has taken the question up with the officials of the road at Lima, and unless immediate action is taken by the railway company it will lose its twenty-five year franchise in this city, as well as the \$5,000 guaranty deposit.

Railway Distributing Station

Boston, Mass.—The steel-concrete elevated railway station at Forest Hills is approaching completion. The station is at the terminus of the elevated road in course of construction, and will fulfill a function similar to that of the Dudley street station, Roxbury, and the Sullivan square sta-



FOREST HILLS ELEVATED PASSENGER STATION

tion, Charlestown, namely, that of a distributing point for suburban passengers. Street car lines connect with the station approaching it by inclines to the level of the elevated or on the ground level, and passengers are forwarded without transfers or the payment of a separate fare. The construction is unique, as it is the only reinforced concrete station of the kind in the country.

Side-Door Subway Cars for Interborough

New York, N. Y.—The Interborough will add five side-door trains to its subway equipment by the middle of August, making six trains of that type in service in all, there being already one train with center side doors in operation.

Good Surplus on Cleveland Traction Lines

Cleveland, O.—After the payment of all expenses for operation and rentals, the local traction lines showed a surplus of \$103,482.01 in June. Mayor Johnson recently said the receivers were purposely holding back the report until after the referendum of August 3 in order to influence the result, but it was made public some time before the election. Gross receipts were \$561,587.60; maintenance, transportation and general expenses were \$320,557.31, leaving net earnings of \$241,030.29. Rental for the neutral traction company lines was \$936.18; taxes, \$24,644.38; interest rental, \$38,589.22, and dividend rental, \$73,378, a total of \$137,548.28, leaving a surplus after the payment of all expense of \$103,482.01. There is no division to show earnings of three-cent and five-cent lines.

Railroad Would Purchase Power from City

Marquette, Mich.—The municipal lighting and power plant, which has been earning large profits for the city for a decade or more from the sale of light and power to private consumers, is producing power so cheaply that the Marquette Street Railway Company has asked the City Commission if it would entertain a proposition to furnish power for the operation of the street car system. The street car system has never been profitable. The city generates current from a water power, the railway by steam.

MISCELLANEOUS

Atlantic City Will Not Tax Baby Carts

Atlantic City, N. J.—“I would walk if I could” now appears on baby coaches on the Esplanade in protest against the proposed tax to be imposed upon perambulators on the boardwalk. The mothers are indignant and refuse to accept any explanation that the proposed municipal regulation is intended more or less as a joke. They have kept the telephone bells ringing in the Mayor's office, and he is worn out declaring his hostility to the measure and saying he will never sign it. William Riddle, chairman of the finance committee, accused of being father of the tax idea, was besieged by angry parents, and the City Solicitor left the resort to escape attacks which were coming from every direction. There are seventeen members of the Council, and sixteen of them are on record as being opposed to the suggestion.

Baltimore to Extend Pier System

Baltimore, Md.—Municipal docks are popular and space on them is in such great demand that it looks now to officials at the City Hall as if the city will in the near future be forced to extend its system of piers down the harbor almost to Canton. This will require a new loan, as the pending \$1,000,000 dock loan will hardly do more than complete the piers now under construction. There is a movement for a double-deck pier at the foot of Broadway for the use of small bay boats, the upper deck to be a recreation center, while there is a daily increase in the demand for wharfage at lower rates than that charged at the big uptown piers. Under the plans advanced by City Councilmen Trautfelter and Sproesser, the city is to extend its dock system so as to provide docking facilities not only on the eastern side of harbor, but on the southern side as well, these docks to be reserved wholly for the small bay trade and a per diem charge to take the place of the long-term lease under which the piers already built by the city are let.

Delay Street Name Changes

Chicago, Ill.—Plans to change names of streets in Chicago have been postponed for “at least a year.” John D. Riley, Superintendent of the City Map Department, announces that this is necessary to give the public an opportunity to become acquainted with the new house numbering scheme. Too great confusion, he said, would result from changing both the house number and the name of the street on which it is located, and the proposed simplification of street nomenclature will probably have to be abandoned for at least a year. General adoption of the new house numbers is expected without opposition September 1.

No Water Wagons for Prohibitionists

Duluth, Minn.—The request of the Prohibitionists that the city allow the use of two water wagons to advertise the approaching lectures of W. G. Calderwood, secretary of the National Prohibition Committee, was turned down, upon the ground that it was against the policy of the city to allow the use of its property for advertising purposes.

Concrete Wharves to Replace Firetraps

Portland, Ore.—That the entire water front of the city within the business district should be included within the fire limits of the city is the belief of Councilman Belding, and he is considering the presentation of an ordinance before the City Council to this end. If the ordinance is passed it will mean that no more wharves and docks can be built within the prescribed district, except of fireproof construction, and that as soon as the old wooden wharves and docks which now line the water front fall into decay and are condemned they must be replaced by steel or reinforced concrete buildings. Several members of the Council have promised their support and state that the water front should be lined with fireproof buildings as well as the business streets of the city. They feel that if a fire should get a good start in the old frame buildings along the water front not only this section of the city, but the entire business district would be in danger.

Fighting Tree Pest at National Capital

Washington, D. C.—The annual warfare on caterpillars and other undesirables that threaten the trees of the National Capital is now on in earnest, with fire and water as the ammunition. The spraying of the trees with water was done some weeks ago and a force is now busy with torches burning the bugs and their eggs. At this time of year, Truman Lanham, Superintendent of Parkings explained, the bugs are in their nests in the bark of the trees, and so special efforts are made to spray the bark of the trunks and limbs of all the trees thought to be affected. The water pressure has been found so far to be strong enough to enable the workmen to reach the tops of the highest trees, and the entire tree, including the bark, is given a thorough spraying. Superintendent Lanham believes that the spraying of the trees is the most effectual and beneficial method of saving the trees from damage by bugs. Not only does the water wash the eggs out of the bark and the worms from the bark and leaves, he declares, but the water drops around the roots of the trees and in that way is beneficial.

Expert Reports on Infected Trees

Auburn, N. Y.—Prof. M. V. Slingerland, of Cornell University, has submitted a report to Park Commissioner John F. McGrath on samples of leaves sent him from infectious trees. He stated “that the insects noted are green lice, which are exceedingly abundant this year in all parts of the State, and they evidently cause some injury to maple trees upon which they are at work. These lice will soon disappear, as they have other food plants upon which to live later on. They are, of course, controlled by solutions of whale oil soap and kerosene emulsion. The holes in the leaf that you sent are indicative of some leaf-feeding insect, perhaps the maple worm, but that I do not feel sure of, as no specimen was enclosed by you. If you find a caterpillar that is actually doing the work and mail it to me, I would be very glad to name it for you and give you a remedy.”

Tardy Work with the Spraying Machine

Monson, Mass.—Most of the elm trees have been sprayed and it is the general opinion that the work has been thoroughly done. There are many who do not think any good has been accomplished, because the work was done so late. They say there have been few slugs on the foliage since spraying began, as they have worked down onto the trunks of the trees where the spraying solution has not reached.

Boston to Letter Its Automobiles

Boston, Mass.—The Board of Aldermen has rejected a proposition to have the city seal placed on the side of every automobile owned by the city. With only one dissenting vote, however, the Board adopted an ordinance providing that each auto owned by the city shall be plainly lettered with the name of the department to which it belongs.

Library Asks City for Automobile

New York, N. Y.—The Public Library Board is the latest applicant to the city for an automobile. In the budget for 1910, submitted to the Finance Department, request is made for a \$4,000 machine, with \$1,300 for maintenance. The car is needed, the officials state, for use in inspecting library branches.

Vehicle Tax; Slot Machines Barred

Oakland, Cal.—Councilman McGregor has introduced in City Council an ordinance regulating the use of vehicles in this city. The proposed ordinance also carries a provision that they be taxed at the rate of \$6 a year. It was referred to the Ordinance and Judiciary Committee. Council finally passed the ordinance prohibiting the use of slot machines in this city after the first of October.

Mayor Compels Enforcement of Speed Laws

Pittsburg, Pa.—Magistrate Henry Ihrig makes no secret of instructions given him by Mayor Magee regarding automobile scorching. A number of defendants charged with exceeding the speed limit appeared before him one day, and he told them he was compelled to fine them or lose his position of Magistrate, that the Mayor was conducting a crusade against speeding and speeding had to cease.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Patented Pavements—Special Law—Invalidity

Cawker et al. vs. Central Bitulithic Paving Co. et al.—Laws 1907 provide that where any municipal corporation of the first class shall have heretofore entered into any contracts for the construction of any pavement which are illegal because requiring the use of patented materials in whole or in part, such contracts shall be validated and affirmed. Held, that Milwaukee being the only city in the first class the act was invalid under the Constitution forbidding the enactment of any special law to amend the charter of a city, and requiring the Legislature to provide general laws for the transaction of any business thus prohibited to be uniform in their operation. Where a municipal paving contract was invalid for failure to comply with certain requirements, the city could not thereafter ratify the contract so as to validate it without complying with such requirements. Where a street paving contract was void for failure to comply with certain charter requirements the contractor, after the completion and acceptance of the work, could not recover therefor on a quantum meruit.—Supreme Court of Wisconsin. 121 N. W. R., 888.

Defective Sidewalk—Slanting Approach

Smith vs. City of Yankton.—In an action for injury to a pedestrian slipping on a slanting wooden approach from a sidewalk to a stone crossing, evidence held not to show that the pedestrian was guilty of contributory negligence. Pedestrians have a right to walk on sidewalks in the most convenient route to reach their destination, and, while they cannot recklessly place themselves in danger of accident, they need not forsake such walks merely because there may be some danger in passing over them, especially when there is no safer route reasonably convenient.—Supreme Court of South Dakota. 121 N. E. R., 848.

Compensation of Employees—Extra Services

Bookman vs. City of New York.—The mere fact that a clerk in the office of the Commissioner of Jurors at an annual salary had to qualify as a Commissioner of Deeds to discharge the duties of his position did not entitle him to extra compensation for administering oaths and certifying thereto.—New York Supreme Court. 117 N. Y. S., 197.

Public Improvement Assessments—Statutes

City of Indianapolis vs. State ex rel Barnett et al.—Burns' Ann. St., 1908, governing assessments for public improvements in certain cities, provides that, if an owner by petition to the Circuit Court shows that the amount assessed against him is excessive, the court shall appoint appraisers to make a reassessment, and that their report shall be entered as a judgment. Held, that the statute is not invalid, as violative of the Constitution, forbidding any person charged with official duties under one department of the State from exercising any function of another department, and the article which declares that the judicial power shall be vested in the courts.—Supreme Court of Indiana. 88 N. E. R., 687.

Use of Streets—Care Required of Traveler

Knight vs. Kansas City et al.—A traveler who did not know of piles of dirt in a street, and who only observed, when two or three blocks away, that a sewer was in the course of construction therein, was not guilty of negligence in driving in the street at night at a trot.—Kansas City Court of Appeals. 119 S. W. R., 990.

Defective Street—Negligence

Burd vs. City of Philadelphia.—Where the broken cover of a sewer inlet is unrepaired for at least two weeks, with notice to the city department, and is covered with muddy water mixed with slush and ice, a woman, without knowing of its existence, who is injured by its giving way under her, may recover damages for her injuries.—Supreme Court of Pennsylvania. 73 A. R., 6.

Power of City to Fix Telephone Rates

City of Jacksonville vs. Southern Bell Telephone and Telegraph Company.—The charter of the city of Jacksonville contains the following provisions, viz.: "The Mayor and City Council of the city of Jacksonville are hereby authorized by ordinance to regulate, require and provide for the opening, grading, paving, improving and repairing of any and all streets, and to require the owner of lots fronting or abutting thereon or contiguous thereto and specially benefited thereby to do such work, or to pay the cost thereof, or to pay such part of the cost thereof as may be fixed by ordinance, * * * to pass all ordinances necessary for the health, convenience and safety of the citizens, and to carry out the full intent and meaning of this act, and to accomplish the objects of this incorporation." A telephone company was operating in said city under an ordinance which contained no condition or provision fixing maximum telephone rates or reserving the power in the city to fix such rates. Held, that under these circumstances the city had no power or authority to pass or enforce an ordinance, subsequent to the one under which the telephone company was operating and using the streets of the city, fixing maximum rates to be charged by said telephone company. Chapter 4,052 confers upon municipalities the power to forfeit the franchises, etc., of any street railroad, gas, electric light, telephone, or other company or corporation, under which such company or corporation is using the streets, etc., upon the violation of the terms and conditions of the grant of such privileges, etc., or upon failure to comply with any reasonable provision of any ordinance of such municipal corporation regulating the use of the streets by such company or corporation, etc.; but these provisions do not confer upon a municipality the implied power to fix maximum telephone rates to be charged by a telephone company using the streets under an ordinance which contains no reservation of the right to fix such rates.—Supreme Court of Florida, 49 S. R., 509.

Ordinance—Meaning of "Opening" Street

Beechwood Park Land Co. et al. vs. City of Summit et al.—An ordinance, entitled "An ordinance to open, grade, macadamize and otherwise improve" a new street designated in such title, contained provisions for the taking of the lands required for such street, by condemnation, and the payment of proper damages for such taking. Held, that the word "open" implies the acquisition by condemnation, if such acquisition be necessary, of the lands required for such opening, and that the title sufficiently indicates an intent to condemn.—Supreme Court of New Jersey. 73 A. R., 57.

Municipal Employees—Compensation

De Angelis vs. City of New Rochelle.—The power conferred on the Common Council of the city of New Rochelle by the laws of 1907, providing that the "Common Council shall prescribe the salaries and wages" of the employees appointed under the act, is not a continuing power, but when once exercised is exhausted, and, though an employee's salary has been fixed for a particular year, a resolution providing for an increase of pay is unauthorized, the designation of the year being surplusage.—New York Supreme Court. 117 N. Y. S., 225.

Removal of Posts Along City Square

Lacey et al. vs. City of Oskaloosa et al.—A resolution passed in 1885 by a City Council, permitting the erection of hitching posts along the street lines about a public square, conferred a mere license, the revocation of which, after posts had been maintained for more than twenty years, was not a wrong for which either law or equity afforded a remedy.—Iowa Supreme Court, 121 N. W. R. 542.

Sidewalk Obstacles

Chapman et al. vs. City of Lincoln et al.—The charter of the city of Lincoln, giving the Mayor and Council supervision and control of all public highways and public ground within the city, does not authorize them to enact ordinances for the leasing of space on the streets or sidewalks in front of business houses for use by produce dealers or other merchants; such use of the streets and sidewalks being unlawful and constituting a nuisance per se. Supreme Court of Nebraska. 121 N. W. R., 596.

NEWS OF THE SOCIETIES

League of Virginia Municipalities.

The league was organized at Richmond in 1906, and has had three annual meetings since its organization—in Newport News, Richmond and Portsmouth. Staunton has been selected as the next meeting place, and the first Thursday in October is the date specified in the articles of association for the annual meetings of the league. The purposes of the organization are to promote systematic collection of information relating to municipal affairs; to foster the exchange of suggestions between municipalities on matters of municipal interest; to propose and influence legislation necessary to proper municipal administration and growth, and to generally interest the public in and advocate all ideas tending to bring municipalities of Virginia abreast of the best municipalities of the country. At the next meeting the question of segregating property for State taxes, as provided by the Constitution to be done in 1913; the equalization of taxes; government of municipalities by commission and other problems will be considered.

New England Water Works Association.—The twenty-eighth annual convention will be held at the Park Avenue Hotel, New York City, September 8-10. Willard Kent, of Narragansett Pier, R. I., is secretary.

Central New York Firemen's Association.—At the convention, Hornell, N. Y., the following papers were read:

"Modern Methods of Fire Fighting that Villages and Small Cities Can Learn from the Metropolitan Departments," William T. Beggin, Chief of the Bureau of Auxiliary Fire Appliances of the City of New York.

"The Ideal Fire Department for a Small City," Chief Henry R. Yates, of Schenectady.

"The Relations of a City or Village Government to Its Fire Department," Mayor Richard Prangen of Hornell.

"Why a Firemen's Convention Is a Benefit to a Department, Its Men and Office," President Parker.

"Should the Office of Fire Marshal Be Established in the State of New York?" Hon. Frank M. Baker.

"The Importance of Fire Wardens and Their Duties," Chief Jewhurst of Auburn, N. Y.

"The Benefit of a Well-Drilled Life-Saving Corps of a Volunteer Fire Department," Chief Musscher.

The following officers were elected: President, James L. Murphy, of Ithaca; secretary, Thomas Knobel, of Homer; treasurer, C. D. Loomis, of Moravia; and chaplain, Father Stevens, of Moravia. Auburn was selected as the place of the next meeting.

The winners in the races were: Hornell Chamber of Commerce Prize "Championship of World"—First, Crystal City team, Corning, 22 seconds; second, Gale Hose, Galeton, 22 1-5 seconds. Hose Race—Crystal City, Corning, won; Neriton Hose, Ithaca, second. Hub and Hub Race—Torrent Hose, Ithaca, first; Triumph Hose, Homer, second. Novice Race—Neriton Hose, Ithaca. Hook and Ladder Race—Crystal City, Corning, first; Orient, Homer, second. Prize Drill—Triumph Hose, Homer. The Elmira Exempt Association was awarded first prize for having the largest company in the parade, and the T. J. Rose Hose Company, of Friendship, was given the prize for being the neatest company in line.

Institution of County and Municipal Engineers.—The Incorporated Association of Municipal and County Engineers of Great Britain has changed its name to that of Institution of County and Municipal Engineers.

Mayors' Association of Texas.—The following resolutions were passed at the San Angelo meeting of the association, as recommended by a committee consisting of J. R. Looney, Pat E. Hooks and George D. Lee:

Whereas, There seem to be insufficient laws covering the care of paupers and those having contagious diseases by the county authorities; and

Whereas, The cities in many cases pay the greater part of the State and county taxes; therefore be it

Resolved, That our Legislative Committee is hereby authorized to frame or have framed such laws adequate to relieve the cities of such.

The following officers were elected: W. D. Davis, Fort Worth, president; C. N. Baldwin, Stephenville, vice-president; Mayor Greer, Mansville, second vice-president; J. T. Lacy, Farmersville, secretary, re-elected.

Tyler was chosen as the next meeting place.

Seven County Firemen's Association.—The fourteenth annual convention of this association, representing the counties of Bradford, Tioga, Potter, Susquehanna and Wyoming, in Pennsylvania, and Steuben and Allegany, in New York, was held at Wells-ville, N. Y., July 14 and 15. The delegates of the fifty-five companies forming the association met in the Baldwin Theatre. Walter Vosburg, of Coudersport, Pa., was elected president; E. W. Coats, of Wellsville, N. Y., first vice-president; H. T. Albee, of Galeton, Pa., second vice-president; P. E. Decker, of Athens, Pa., secretary, and C. H. Wells, of Towanda, Pa., treasurer. In the evening a banquet was served to the 270 delegates. On the following day forty-one companies, containing over 1,500 men, and twenty bands, marched in procession. This was followed by athletic games, in which several hundred dollars was distributed as prizes.

Rochester Public Health Association.—A report has been prepared by the association, at the request of the Mayor and Board of Supervisors, to advise them as to the proper procedure in the matter of a tuberculosis hospital. The report recommends the appointment of a commission to have charge of the campaign against tuberculosis, five members to be appointed by the Supervisors and ten by Mayor H. H. Edgerton. This, they argue, would place all proposed institutions under one management, which they think would result most favorably in the fight against the great white plague. The directors propose that this commission, or board of managers, have charge of the present Municipal Hospital and such additions as may be made to it, or the portion to be used for tubercular patients, and also of a receiving hospital to be erected and operated by the county, also of a sanitarium for incipient cases, to be erected and operated by the city when necessity shall demand it.

Massachusetts Association of Police Chiefs.—The annual outing of the association at Nahant, July 29, was attended by twenty-seven chiefs and their wives from Massachusetts cities and towns. Dinner was served at 12 o'clock, after which a program of athletic events was held. Chief Corson, of Swampscott, won the running high jump. Chief Tod Urhardt, of Arlington, won first prize for putting the shot, and Chiefs Pierce, of Milton, and Grady, of Peabody, won the three-legged race. The women in the party were given auto rides to Revere and Beverly by the Summer people at Nahant.

Calendar of Meetings

August 9-11.

International Acetylene Association.—Twelfth Annual Meeting, Hotel Knickerbocker, New York, N. Y.

August 9-14.

National Irrigation Congress.—Annual meeting, Spokane, Wash.—B. A. Fowler, Secretary, Phoenix, Ariz.

August 10.

Connecticut State Fire Chiefs' Association.—Annual Meeting, New London, Conn.—R. R. Fancher, Secretary, New Haven, Conn.

August 10-11.

Connecticut State Firemen's Association.—Convention, New London, Conn.—R. V. Magee, Secretary, Watertown, Conn.

August 11-13.

National Firemen's Association.—Convention, Lansing, Mich.—P. B. McCarty, Secretary, P. O. Box 600, St. Louis, Mo.

August 17-20.

New York State Firemen's Association.—Convention and Parade, Poughkeepsie, N. Y.—Thomas Holohan, Secretary, Frankfort, N. Y.

August 17-20.

International Association of Fire Engineers.—Annual Convention, Grand Rapids, Mich.—James McFall, Secretary, R-anoke, Va.

August 25-27.

League of American Municipalities.—Thirteenth Annual Convention, Montreal, P. Q., Canada.—John MacVicar, Secretary, Des Moines, Ia.

August 25-27.

Virginia State Firemen's Association.—Convention and Tournament.—G. C. Cumming, Secretary, Portsmouth, Va.

August 31-September 2.

Association of Edison Illuminating Companies.—Annual meeting, Briarcliff Manor, N. Y.—D. L. Huntington, Secretary, Spokane, Wash.

September 1-3.

League of Third-Class Cities of Pennsylvania.—Annual convention, New Castle, Pa.—Mayor D. M. Johnson, Secretary, Chester, Pa.

September 7-10.

Pacific Coast Association of Fire Chiefs.—Convention, Seattle, Wash.—W. H. Bringham, Secretary, Seattle, Wash.

September 8-10.

New England Water Works Association.—Annual convention, New York City.—Willard Kent, Secretary, Narragansett Pier, R. I.

September 9.

New Jersey State Firemen's Association.—Convention, Atlantic City, N. J.—William Exall, Secretary, 86 Bruce street, Newark, N. J.

September 14-16.

International Association of Municipal Electricians.—Annual convention, Atlantic City, N. J.—F. P. Foster, Secretary, Corning, N. Y.

September 14-17.

Michigan Gas Association.—Annual meeting, Detroit, Mich.—A. P. Ewing, Secretary, Detroit, Mich.

September 15-17.

Massachusetts State Firemen's Association.—Convention, Plymouth, Mass.—D. Arthur Burt, Secretary, Taunton, Mass.

September 29.

New Hampshire State Firemen's Association.—Convention, Woodsville, N. H.—George L. Osgood, Secretary, Concord, N. H.

September 29-30.

Ohio Fire Chiefs' Association.—Convention, Alliance, O.—D. K. Mosher, Secretary, Warren, O.

October 4-8.

American Street and Interurban Railway Association.—Annual convention, Denver, Col.—B. S. Swenson, Secretary, 29 W. 39th St., New York, N. Y.

October 7.

League of Virginia Municipalities.—Fourth annual meeting, Staunton.—J. Davis Reed, Portsmouth, President; L. C. Brinson, Portsmouth, Secretary.

October 19-22.

American Public Health Association.—Annual convention, Richmond, Va.—Charles O. Probst, Secretary, Columbus, O.

October 20.

American Gas Institute.—Annual meeting, Detroit, Mich.—A. B. Beadle, Secretary, 29 W. 39th St., New York, N. Y.

November 9-11.

American Society of Municipal Improvements.—Annual convention, Little Rock, Ark.—A. Prescott Folwell, Secretary, 241 W. 39th St., New York, N. Y.

November 15-19.

National Municipal League.—Annual meeting, Cincinnati, O.—Clinton Rogers Woodruff, Secretary, 705 North American Building, Philadelphia, Pa.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Arkansas.....	Marianna.....	Aug. 5.....	Brick block paving, 13,400 sq. yds. on 5-in. concrete base; 4,000 lin. ft. concrete curb, etc.; Ben C. McGehee, Little Rock, Eng.	J. E. Stevenson, Sec'y Bd. Comrs
Louisiana.....	Franklin.....	Aug. 5.....	Laying 65,000 sq. ft. cement walk, 32,500 sq. ft. brick curbing.	John C. Lewis, Mayor.
Kentucky.....	Louisville.....	Aug. 5.....	Brick paving, 3 sts., \$36,000; brick gutter, cost, \$4,800, in several streets.	Board of Public Works.
Indiana.....	Spencer.....	Aug. 5, noon.....	Bldg. 3,605 ft. macadam road on Mugg road, Taylor township.	G. W. Edwards, County Auditor.
Indiana.....	Crown Point.....	Aug. 5, 2 p.m.....	Constructing gravel road in North township.	Charles A. Johnson, County Auditor.
Indiana.....	Fort Wayne.....	Aug. 5.....	Paving 6 sts., cement walks on Creighton ave.	Edw. J. Lennon, Chm. Bd. Pub. Wks.
Virginia.....	Portsmouth.....	Aug. 5.....	Concrete walks, 435 sq. yds.; granite block gutters, 1,100 sq. yds.	Basco n Sykes, City Engineer.
Ohio.....	Cincinnati.....	Aug. 5, noon.....	Bldg. and repairing brick, plank and artificial stone sidewalks.	John J. Wenner, Clk. Bd. Pub. Serv.
New Jersey.....	Morristown.....	Aug. 6.....	Brick block paving, 2,500 sq. yds., curbing, regulating, Wash. st.	Nathaniel C. Toms, Town Clerk
Indiana.....	Elkhart.....	Aug. 6, 10 a.m.....	Paving, any hard material, curb, etc., High st., 28 ft. wide.	Ethan L. Arnold, Chm. Bd. Pub. W's.
Nevada.....	Carson.....	Aug. 6, 10 a.m.....	Furn. f. o. b. Carson City, 10-ton road roller; comp. tests invited.	E. O. Patterson, County Clerk.
New York.....	Hoosick Falls.....	Aug. 6.....	Brick paving, 3,600 sq. yds.; tar macadam, 18,000 sq. yds.; concrete curb, 6,000 lin. ft.; concrete sidewalk, 2,000 lin. ft.	Public Improvement Commission.
Pennsylvania.....	Harrisburg.....	Aug. 6.....	Rebldg. 5,030 lin. ft., Richland twp., Cambria County; also rebldg. 14,950 ft. road, No. Manheim township, Schuylkill Co.	Jos. W. Hunter, State Hwy. Com.
New York.....	Albany.....	Aug. 6, 1 p.m.....	Repair or resurface 4 state roads, in Chenango County.	S. Percy Hooker, Chm. State Hwy. C.
Ohio.....	Cincinnati.....	Aug. 6.....	Oiling Colerain Pike, Colerain twp., Spec. No. 917.	Fred. Dreihls, Clk. County Comrs.
Pennsylvania.....	Lansdowne.....	Aug. 6, 8:30 p.m.....	Paving 21,000 sq. yds. Balto. ave., bitu., repressed vit. shale or fire clay blocks, on concrete; 7,500 cu. yds. excav.	John W. Davis, Sec'y Boro. Council.
New York.....	Albany.....	Aug. 6, 1 p.m.....	Resurfacing or repair, of 5 state roads Ontario Co., cost \$750,000.	S. Percy Hooker, Chm. State Hwy. C.
Ohio.....	Delaware.....	Aug. 6.....	Paving 9,000 sq. yds., W. Winter st. and Carroll ave.; cost, \$23,000.	Geo. S. Irwin, City Engineer.
Ohio.....	Lancaster.....	Aug. 6.....	Paving portions of Mulberry st. and Forest Rose ave.	Geo. Cunningham, Clk. Bd. Pub. Ser.
Pennsylvania.....	Evansburg.....	Aug. 6, 7:30 p.m.....	Paving 5,720 sq. yds., 3,100 lin. ft. concrete curb and gutter; 3,300 cu. yds. grading, etc., Washington and Jackson streets.	Al. Lotz., Clk. of Council, Evans City.
Indiana.....	New Albany.....	Aug. 7, 10 a.m.....	Paving 480 lin. ft. with brick, bitu., asphalt or wood block on concrete.	John C. Short, City Clerk.
Wisconsin.....	Beloit.....	Aug. 7.....	Improving Summit avenue.	Board of Public Works.
Illinois.....	Streator.....	Aug. 7, 9 a.m.....	Graveling one mile of road in town of Eagle.	Wm. Pierce, Chm. Comrs. of Hwys.
New Jersey.....	Jersey City.....	Aug. 9.....	Belgian pavement, 6,850 sq. yds., cement walk, 15,832 sq. ft.; 5 x 16-in. curb, set in concrete, 3,950 ft. lin. on Terhune ave.	Geo. T. Bouton, Clk. St. & Water Bd.
Georgia.....	Atlanta.....	Aug. 9.....	Paving 22,000 sq. yds. Decatur st. with wood block on cement or concrete block; also 2,300 sq. yds. Madison ave. with wood block.	R. M. Clayton, City Engineer.
Ohio.....	Fremont.....	Aug. 9.....	Macadamizing about 5 miles of Gibbs road.	Board of County Commissioners.
Ohio.....	Eucled.....	Aug. 9, noon.....	Improving Chardon road, 5,626 ft. long; F. A. Pease Eng. Co.	Nelson J. Brown, Village Clerk.
Montana.....	Great Falls.....	Aug. 9, 8 p.m.....	Creo. wood block paving First ave., South: 13,000 sq. yds., 2,040 cu. yds. concrete; 2,350 cu. yds. earth excav., 642 lin. ft. headers, \$3,000 check; C. W. Swearingen, City Engineer.	W. P. Wren, City Clerk.
Mississippi.....	West Point.....	Aug. 9, 6 p.m.....	Paving cement gutters and graveling streets in fire limits.	B. Y. Rhodes, Mayor.
Ohio.....	Bucyrus.....	Aug. 9, noon.....	Paving Walnut st. from Lucas to Oakwood.	F. L. Neiderheiser, City Engr.
Ohio.....	Youngstown.....	Aug. 9.....	Turnpiking road in Dist. No. 1, distance of 17,641 feet.	Saml. Brunstatter, Chm. Co. Comrs.
Ohio.....	Canton.....	Aug. 9.....	Paving portions 3 streets and 4 avenues, inc. W. Tuscarawas st.	A. C. Zellars, Clk. Bd. Pub. Service.
Saskatchewan.....	Moose Jaw.....	Aug. 9.....	Bldg. 67,000 sq. ft. concrete sidewalk, 2,100 sq. yds. creosote block crossing, 10,500 lin. ft. concrete gutter, etc.	J. Darlington Whitmore, City Engr.
Ohio.....	Cincinnati.....	Aug. 10, noon.....	Granite block paving, grading, curbing, Harrison ave.	John J. Wenner, Clk. Bd. Pub. Serv.
Pennsylvania.....	Bellevue.....	Aug. 10, 6 p.m.....	Paving 2 and repaving 1 ave., total, 7,970 sq. yds.; 335 lin. ft. curb, 3,650 cu. yds. grading, 780 ft. storm sewer, etc.	James M. Simeral, Clk. of Council.
New Jersey.....	Jersey City.....	Aug. 11.....	Grading, paving, draining, sodding, etc., new court house gr'nds.	Alex. J. Clements, Clk. New Co. Bldg. Commission.
Rhode Island.....	Providence.....	Aug. 11, noon.....	Bldg. 6,500 ft. road, 3 towns: 13,200 ft., 2 towns, for state.	State Board of Public Roads.
New Jersey.....	Camden.....	Aug. 11, 11 a.m.....	Bldg. stone road 14 ft. wide, 1,629 miles long of either Amiesite or asphalt macadam; also 14 ft. road, 1,237 miles long; J. I. Albertson, Co. Engr.	Alfred L. Sayers, Dir. Bd. Frech'ders.
Pennsylvania.....	Gallitzin.....	Aug. 12, noon.....	Brick paving, 8,500 sq. yds.	D. W. Dillon, Engr., Altoona.
Ohio.....	Millersburg.....	Aug. 12.....	Brick paving, 5,000 sq. yds., stone or concrete curb; \$8,640.	Saml. Franks, Jr., Village Clerk.
Ohio.....	Columbus.....	Aug. 12, noon.....	Furn. f. o. b. cars penitentiary siding: 2,500 bbls. Portland cement, 300,000 to 400,000 common brick, 2,000 yds. sand, 1,000 bushels lime, 150,000 to 200,000 face brick, 50,000 to 100,000 glazed brick, 1,000 yds. crushed stone; Osborn Eng. Co., Cleveland, Engrs.	Bd. Managers, Ohio Penitentiary.
Pennsylvania.....	Pittsburg.....	Aug. 12, noon.....	Grading and paving 666 lin. ft. Ridge road in Chambers twp.	Geo. T. Barnsley, Chief Co. Rd. Engr.
Ohio.....	Pleasant Ridge.....	Aug. 13.....	Bldg. artificial stone walks, Wms. and Liberty sts. and Carth. ave.	W. C. Davies, Village Clerk.
New York.....	Albany.....	Aug. 13, 1 p.m.....	Repairing and resurfacing various State highways.	State Highway Commission.
Ohio.....	Cincinnati.....	Aug. 13, noon.....	Improving Ohio pike, \$5,000 bond; resurfacing pike, \$1,000 b'd.	Fred. Dreihls, Clk. County Comrs.
Pennsylvania.....	Philadelphia.....	Aug. 14, 11 a.m.....	Street paving, curbing, rr. track and drains, at Navy Yard.	Bur. Yds. & Docks, Navy Dept., Washington, D. C.
Ohio.....	Columbus.....	Aug. 14.....	Macadamizing, etc., Pontius road, 4.3 miles long.	Walter Braun, Clk. County Comrs.
Ohio.....	Cleveland.....	Aug. 14, 11 a.m.....	Grading and draining Grange road, South Newburg twp.	A. B. Lea, County Surveyor.
Minnesota.....	St. Paul.....	Aug. 16.....	Improving Hamline ave. and Siestedt road.	Edward G. Krahmer, Co. Auditor.
Ohio.....	Eucled.....	Aug. 16.....	Improving Eucled road; F. A. Pease Eng. Co., Cleveland.	Nelson Brewer, Village Clerk.
Pennsylvania.....	Pittsburg.....	Aug. 19, noon.....	Macadam or brick block paving, 2 roads, 4.04 and 4.12 miles long.	R. J. Cunningham, Co. Controller.
Ohio.....	Cleveland.....	Aug. 18, 11 a.m.....	Grading, draining and improving Miles ave., No. 3 road.	A. B. Lea, County Surveyor.
Wisconsin.....	De Pere.....	Aug. 19.....	Paving Broadway.	Com. on Sts. and Sidewalks.
Ohio.....	Cincinnati.....	Aug. 20.....	Improving State road, Crosby twp.; Specifications No. 942.	Fred. Dreihls, Clk. County Comrs.
Wisconsin.....	Janesville.....	Aug. 20.....	Constructing 5,270 sq. yds. of macadam.	C. V. Kerch, City Engineer.
New York.....	Madison Barracks.....	Aug. 21, 2 p.m.....	Bldg. 6,000 sq. ft. driveways and 4,500 sq. ft. walks at post.	Chief O. M., Governor's Island.
Ohio.....	Bellefontaine.....	Aug. 21, noon.....	Paving 6,700 sq. yds. brick South Detroit st.	Clair A. Inskeep, City Engineer.
Ohio.....	Ashland.....	Aug. 23.....	Grading and paving Second st.; labor and material separate.	E. L. Berry, Engr. of Village.
Virginia.....	Staunton.....	Aug. 23, noon.....	Constructing 4 1-2 miles of macadam road, Augusta Co.	Harry Burnett, Clk. Bd. Supervisors.
Ohio.....	Columbus.....	Aug. 23.....	Macadamizing, grading, etc., 9,608 ft.; also 2,466 ft. of road.	F. M. Sayre, County Auditor.
Maryland.....	Ft. Howard.....	Aug. 27.....	Constructing 15,000 sq. ft. of granitoid sidewalk.	Maj. C. C. Bolton, U. S. A., Baltimore.
Indiana.....	Rushville.....	Aug. 30, 2 p.m.....	Constructing 3 miles of macadamized roads on County line.	Stewart & Kennedy, Engineers
Connecticut.....	New Haven.....	Sept. 3.....	Paving 3 sts. with crushed stone and tar dressing; portion of Congress st. with shale block and part with wood block.	Public Comm. on Pavements.
Mississippi.....	Vicksburg.....	Sept. 6, 8 p.m.....	Paving Cherry st. with any hard material, sewers, etc.	J. J. Hayes, Mayor.
Indiana.....	Shelbyville.....	Sept. 6, 1 p.m.....	Constructing a gravel road in Liberty township.	G. B. Hunter, County Auditor.
SEWERAGE				
Minnesota.....	St. Paul.....	Aug. 5.....	Constructing sewers in five streets.	M. J. McMahon, Clk. Bd. Pub. Wks.
No. Dakota.....	Jamestown.....	Aug. 5.....	Bldg. sewage disposal plant, inc. concrete septic tank, etc., man-holes, filter beds, sludge basin, etc., State Hospital.	M. D. Williams, Steward, State Hosp.
Virginia.....	Portsmouth.....	Aug. 5, 8 p.m.....	Furn. and distributing on sts. 836 ft. 24 to 36-in. pipe.	Bascom Sykes, City Engineer.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
SEWERAGE—Continued				
Kentucky	Louisville	Aug. 6, noon	Bldg. Sec. B, western interceptor; Cont. 49; mainly 4,000 ft. 3.5 to 5 ft. unreinforced concrete sewer, 12-25 ft. deep.	W. C. Nones, Chm. Sewer Com. Village Clerk.
Minnesota	Baudette	Aug. 6	Bldg. water works and light plant and sewer system; \$23,500.	John W. Davis, Boro. Sec'y.
Pennsylvania	Lansdowne	Aug. 6, 8:30 p.m.	Bldg. 1,800 ft. branch sewer in 3 avenues.	Douglass & McKnight, Boro. Engrs.
Pennsylvania	Evansburg	Aug. 6, 7:30 p.m.	Bldg. storm sewer in Harmony alley, 620 ft., 18-in. pipe.	W. F. Wunderlich, Ck. Bd. Pub. Wks.
Indiana	Evansville	Aug. 7, 10 a.m.	Bldg. 3 vit. sewer laterals.	E. D. Rightmire, City Engineer.
New Jersey	Atlantic City	Aug. 9	Bldg. portion of storm water drainage system for city.	I. J. Wenner, Ck. Bd. Pub. Serv.
Ohio	Cincinnati	Aug. 9, noon	Improving trunk sewer, also laying 24-in. pipe sewer.	Fred. Fries, City Clerk.
Texas	San Antonio	Aug. 9, 11 a.m.	Bldg. Prospect Hill sewer system in Improvement Dist. No. 7.	King E. Beal, City Clerk.
Iowa	Fort Dodge	Aug. 9, 5 p.m.	Material and labor for 20 and 24-in. pipe sewer with 10 catch basins.	J. Starrett, City Engineer.
Ohio	Canton	Aug. 9, noon	Bldg. Sandal st. sanitary and Worley ave. storm water sewers.	M. R. Silance, Ck. Twp. Com.
New Jersey	Millburn	Aug. 9	Constructing certain sewers; Alex Potter N. Y. City, Engr.	Board of Public Service.
Ohio	Bucyrus	Aug. 9	Constructing sewers in Galvin and Poplar sts.	A. M. Childs, City Clerk.
Minnesota	Crookston	Aug. 10, 8 p.m.	Repairing and rebldg. 3d st. sewer outlet in Sewer Dist. No. 1.	
New York	Olean	Aug. 10, noon	Bldg. outlet sewer in Eighth Ward, 2.4 miles long; also additional outlet in First, Fourth and Fifth Wards, 1.3 miles long; separate bids.	
South Carolina	Newberry	Aug. 10, noon	Extension sewer and water systems; Wilson, Sompayrac & Urquhart, Engineers.	M. L. Spearman, Chm. Pub. Wks. Com.
Ohio	Cincinnati	Aug. 10	Constructing sewers in two ravines.	John J. Wenner, Ck. Bd. Pub. Serv.
Ontario	Cobalt	Aug. 10	Furn. vit. tile pipe and junctions; c. i. manhole covers; constructing sewers and water works.	P. J. Hart, Town Cl.
Pennsylvania	Bellevue	Aug. 10, 6 p.m.	Storm water sewer: 550 ft. 18-in., 200 ft. 15-in., 30 ft. 12-in.	John McBride, Boro. Engr.
New York	Brooklyn	Aug. 11, 11 a.m.	Material and labor for bldg. sewers in various sts.	Bird S. Coler, Boro. President.
Idaho	Boise City	Aug. 12, noon	Bldg. lateral sewers, manholes, flush tanks, etc., Dist. No. 108.	D. D. Williams, Pres. Bd. Pub. Wks.
Kentucky	Louisville	Aug. 13, noon	Bldg. Ewing ave. sewer, Contract No. 50, Compr. Sewer System.	J. B. F. Breed, Ch. Engr. Sew. Com.
New York	Fort Terry	Aug. 14, 10 a.m.	Constructing 5,463 ft. 6 and 10-in. sewer; 557 ft. 4-in. water main.	Capt. Chas. T. Baker, Q. M.
Minnesota	Cloquet	Aug. 16, 8 p.m.	Bldg. sewer and water mains: 3,310 cu. yds. earth and 810 cu. yds. rock excav. and back filling; 5,230 ft. sewer, 17 manholes, etc.	S. L. Moyer, City Engineer.
New Jersey	Hackensack	Aug. 16, 8 p.m.	Bldg. 540 ft. flat top concrete sewer, 3 ft. wide; 2,495 ft., 5 ft.; 390 ft., 4.5 ft.; 384 ft., 4 ft.; 370 ft., 3.75 ft.; also for 310 ft. 21-in. and 290 ft. 18-in. vit. pipe; also 1,529 ft. 24-in. and 327 ft. 18-in. pipe; also 345 ft. 20-in., 345 ft. 10-in. and 360 ft. 12-in. pipe, and 221 ft. 18-in., and 209 ft. 12-in. pipe sewer.	C. Linkroum, Pres. Impvt. Com.
New York	Auburn	Aug. 17, 8 p.m.	Bldg. sewage disposal works, inc. automatic feeding and discharging appliances; W. Thomas Wooley, City Engineer.	C. A. Koenig, Mayor.
Minnesota	Virginia	Aug. 17	Constructing sanitary sewer in East Division Dist.	Albert E. Bickford, City Clerk.
Minnesota	Albert Lea	Aug. 19, 5 p.m.	Material and labor for trunk sewer, rein. concrete, pipe and double sewer, sewage lift, etc., inverted siphon, etc.	C. J. Dudley, City Clerk.
Ohio	Xenia	Aug. 21	Bldg. sewage disposal plant and sewers at Orphan's Home.	J. P. Elton, Ex. Off. S. & S. Orp. H'me
Pennsylvania	Blakely	Aug. 23, 8:30 p.m.	Constructing sanitary sewer: First Dist., 27,000 ft.; Second Dist. 18,000 ft.; size, 8, 10 and 12-in., and smaller.	A. B. Dunning, Borough Engineer
Kansas	Marion	Aug. 24, 8 p.m.	Bldg. 4,167 ft. 8-18-in. vit. pipe, 15 manholes; cost, \$6,612.	Thos. S. Bown, City Clerk.
New Jersey	Belmar	Aug. 24, 7:30 p.m.	Material and labor for bldg. and equipping certain sewers and sewage disposal works and connecting existing sewers and sea outlet pipe; 3,600 cu. yds. sand and gravel excav.; 970 ft. vit. pipe up to 20-in., 900 cu. yds. concrete, part reinforced; small concrete pump house.	Charles O. Hudnut, Boro. Clerk.
Arkansas	Rogers	Sept. 1, 3 p.m.	Furnishing material and constructing sewers: 30,000 ft. 8-in., 1,700 ft. 10-in., 3,000 ft. 12-in. pipe sewers; septic tank, etc.	M. A. Earl & Co., Muskogee, Ark.
Mississippi	Vicksburg	Sept. 6, 8 p.m.	Constructing storm sewer, etc., in Cherry st.; C. R. Twiss, City Engr.	J. J. Hayes, Mayor.
WATER SUPPLY				
Nebraska	Scottsbluff	Aug. 5	Bldg. main canal and lateral system for J. G. White & Co.	Boyd Ehle, Constr. Supt., White & Co.
Oklahoma	Okemah	Aug. 5, 8 p.m.	Material and labor for w. w. and elec. light plant, inc. 1 well, 2 buildings, 2 tubular boilers, steam engine, a. c. dynamo, motor, 2 power pumps, tower and tank, pipe line, hydrants, valves, etc.; M. A. Earl & Co., Muskogee, Engrs.	P. J. Becker, Town Clerk.
British Columbia	Victoria	Aug. 6	Furn. c. i. pipe, pig lead, gate valves, etc., for w. w. system.	W. W. Northcott, Civic Purch. Agent.
Utah	Salt Lake City	Aug. 6	Bldg. No. Temple st. aqueduct across 3 streets.	Louis C. Kelsey, City Engineer.
Minnesota	Baudette	Aug. 6, 4 p.m.	Bldg. water works and electric light plant; \$23,500 bonds voted.	O. Claussen, C.E., German-American Bank Building, St. Paul.
Dist. Columbia	Washington	Aug. 7, noon	Furnishing 200 fire hydrants.	Bd. of District Commissioners.
British Columbia	New Westminster	Aug. 9	74,600 ft. 24-in. and 16,000 ft. 12-in. steel pipe.	City Clerk.
Colorado	Lamar	Aug. 9, 8 p.m.	Bldg. Sec. 2; 9 miles vit. pipe line; Sec. 3; wood-covered concrete reservoir 12 ft. deep, 230 ft. square, for w. w.	J. F. Curry, Town Clerk.
Massachusetts	Boston	Aug. 9, 2:30 p.m.	Laying 1,580 ft. 12-in. c. i. pipe and 300 cu. yds. excav. in Arlington.	Metropolitan Water & Sewerage Bd.
Ontario	Cobalt	Aug. 10	Furn. c. i. pipe and specials; valves and hydrants; steel stand pipe; pumping machinery; labor for bldg. w. w. and sewers.	P. J. Hart, Town Clerk.
Minnesota	Greenbush	Aug. 10	Laying about 1,200 ft. of water mains.	A. F. Kular, Village Clerk.
South Carolina	Newberry	Aug. 10, noon	Extending water and sewer systems; \$25 for plans, etc.	M. L. Spearman, Chm. Pub. Wks. Com.
West Virginia	Wheeling	Aug. 11	Furn. and erecting 20,000,000-gal. triple expansion, high-duty, crane and fly-wheel pumping engine.	Mayor C. C. Schmidt, Chm. Bd. Con'l.
Montana	Glasgow	Aug. 11	Five miles mains: 16,400 ft. 6-in., 4,350 ft. 8-in. iron or wood pipe and 2,550 ft. wood pipe; pumping station, complete; 200,000-gal. concrete reservoir.	E. S. Severance, City Engineer.
Minnesota	Cloquet	Aug. 16, 8 p.m.	Furn. and laying 5,230 ft. 6-in. water main, 11 hydrants, 14 valves, sewers, excav. rock and earth, etc.; cost, \$18,000.	Jos. Loisel, City Clerk.
Ohio	Bradford	Aug. 16, noon	Material and labor for w. w. system, inc. pipe, lead, castings, hydrants, valves, pumps, engines, stand pipe, pumping station.	Bd. Trustees of Public Affairs.
Washington	Sunnyside	Aug. 16, 2 p.m.	Constructing Sulphur Creek wasteway channel and structures near Sunnyside, inc. bldg. 4 1-4 miles of channel, involving 225,000 cu. yds. excav., 2,000 cu. yds. riprap, and placing 1,600 cu. yds. concrete masonry, and 130 cu. yds. paving.	U. S. Reclamation Serv. No. Yakima Water Commissioners.
New York	Niagara Falls	Aug. 16	Furn. 9 pumps, piping, valves, etc., for new w. w.; cost, \$60,000.	Percy M. Blake, Ch. Engr. Water Bd.
Connecticut	New Britain	Aug. 17	Constructing earth-concrete dam in town of Burlington.	W. H. Ortt, Treas. Military Home.
Ohio	Nat'l Mil. Home	Aug. 17	Increase and improvement of water supply.	F. M. Houser, Mayor.
Georgia	Perry	Aug. 18	Material and labor for bldg. water supply system for city.	State Lunacy Comm., Albany.
New York	Binghamton	Aug. 18, 3 p.m.	Extension of water supply system, etc., State Hospital.	State Capitol Commission.
So. Dakota	Pierre	Aug. 23, 3 p.m.	Drilling artesian well 1,500 ft. deep in Capitol grounds.	
Indiana	Michigan City	Aug. 24	Furnishing 5,300 ft. 12-in. pipe, 2,000 ft. 6-in., 1,000 ft. 4-in. pipe; 16 six-in. and two 12-in. gate valves; two 12-in. tees; six crosses and 20 valve boxes; ten tons of lead.	E. J. Heise, City Clerk.
No. Carolina	Smithfield	Sept. 6	Constructing system of water works for Court House and jail.	Sam T. Honeycutt, Ck. C. Comrs.
Mississippi	Vicksburg	Sept. 6, 8 p.m.	Laying water main in Cherry st.; R. Truss, City Engr.	J. J. Hayes, Mayor.
Michigan	Detroit	Sept. 14 noon	Three 30,000,000-gal. pumping engines at new station.	Benj. F. Guiney, Sec'y Wtr. Comrs.
BRIDGES				
New Jersey	Perth Amboy	Aug. 5, 11 a.m.	Bldg. 4 concrete culverts, from 4 to 15 ft. long.	Morgan F. Larson, County Engr.
Washington	North Yakima	Aug. 6	Bldg. bridge over Yakima river 4 miles east of Mabton; two 80-ft. comb. spans and steel span 180 ft. long, all rest on concrete piers.	Board of County Commissioners.
Pennsylvania	Chambersburg	Aug. 6, 11 a.m.	Erecting reinforced concrete bridge over Black Creek.	Board of County Commissioners.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
BRIDGES—Continued				
Pennsylvania	Somerset	Aug. 9	Bldg. superstructures of wrought iron or steel; three 31-ft. bridges, 16, 14 and 12-ft. roadways; 35 and 43-ft. bridges with 12-ft. roadways; all roadways of concrete; separate bids for stone abutments for all bridges	R. S. McMillen, Chm. Bd. Co. Comrs.
Ohio	Springfield	Aug. 9	Rebldg. Moores Lime Co. bridge, No. 1008, Springfield twp.	J. E. Lowry, Chm. Co. Comrs.
Pennsylvania	Allentown	Aug. 9, 1:30 p.m.	Reinforcing wooden covered bridge over Jordan Creek	Northumberland County Comrs.
Saskatchewan	Moose Jaw	Aug. 9	Bldg. reinforced concrete bridge, abutments, etc.	J. Darlington Whitmore, City Engr.
Georgia	Griffin	Aug. 10	Bldg. steel bridge for Spalding and Henry counties	Solomon Norcross & Co., Atlanta, Engineers.
Wisconsin	Park Falls	Aug. 11	Bldg. new bridge, 4 spans, 82.5 ft. each; riveted girders on steel tube foundations over Flambeau river	Village Clerk.
No. Dakota	Fargo	Aug. 11	Erecting and repairing various bridges	Arthur G. Lewis, County Auditor.
California	Oakland	Aug. 11, 11 a.m.	Bldg. concrete culvert in Glen Echo creek; bond, \$3,500.	W. B. Fawcett, Sec'y Bd. Pub. Wks.
Ohio	Cleveland	Aug. 11, 11 a.m.	Bldg. concrete bridge on Spencer Road, Rocky River twp.	Wm. F. Black, Clk. County Comrs.
Ohio	Akron	Aug. 12	Extending Kenmore bridge over Ohio Canal	Chas. L. Wirth, Clk. County Comrs.
Ohio	Jackson	Aug. 12, 1 p.m.	Bldg. 3 concrete arch bridges; 2 concrete bridges, flat top.	W. J. Shumate, County Auditor.
Idaho	Bonnets Ferry	Aug. 12	Material and labor for bldg. bridge over Kootenai river	W. A. Leslie, Sec'y Bridge Comrs.
Pennsylvania	Danville	Aug. 14, 10 a.m.	Bldg. 3 steel bridges with concrete floor, each 14 ft. wide; 54, 26 and 24 ft. long; checks, \$500, \$200 and \$200.	Horace C. Blue, Clk. Co. Comrs.
Kansas	Concordia	Aug. 16	Bldg. \$8,500 bridge over Republican river; \$2,000 bridge in Starr twp.; two \$1,800 bridges in Center twp. for County.	R. A. Short, County Clerk.
Kansas	Yates Center	Aug. 16	Constructing steel or concrete arch bridge for County.	John E. Barrett, County Clerk.
Arizona	Phoenix	Aug. 16	Bldg. \$100,000 rein. concrete bridge over Salt River	Bd. Supervisors, Maricopa County.
Oklahoma	Lawton	Aug. 16	Constructing nine steel bridges for County.	Board of County Commissioners.
Maine	Rumford	Aug. 17, 2 p.m.	Furn. material and bldg. bridge 600 ft. long over Androscoggin river, requiring 700 cu. yds. masonry for Town Selectmen.	E. E. Greenwood, Engr., Skowhegan.
No. Carolina	Asheville	Aug. 17	Plans, etc., for bldg. steel, concrete or combination bridge over French Broad river, 900 ft. long, 23 ft. in clear, 30 ft. wide, besides 6-ft. walkway.	J. E. Rankin, Chm. Co. Comrs.
Ohio	Zanesville	Aug. 19	Bldg. riveted truss bridge with 73-ft. span and 12-ft. roadway.	L. E. Brelsford, County Auditor.
Georgia	Columbus	Aug. 20	Bldg. bridge over Baker creek bet. Muscogee and Talbot Cos.	E. J. Rankin, Chm. Co. Comrs.
Illinois	Chicago	Aug. 25, noon	Excav. channel and collateral bridge and sewer work, Sec. 3, No. Shore.	I. J. Bryan, Clk. Sanitary Dist.
New Jersey	Elizabeth	Aug. 30	Constructing hwy. bridge over Rahway river, Cranford.	Jacob L. Bauer, County Engr.
Minnesota	Minneapolis	Sept. 1	Furn. designs, detail plans, etc., for several bridges; 3 prizes.	Board of Park Commissioners.
California	Merced	Sept. 21, 10 a.m.	Constructing steel bridge over Merced river.	P. J. Thornton, Clk. Bd. Co. Supvs.
LIGHTING AND ELECTRICITY				
Oklahoma	Okemah	Aug. 5	Constructing electric light and water plant; 2 tubular boilers, steam engine, a. c. dynamo, motor, 2 power pumps, pole and wire line, st. lamps, etc.	M. A. Earl & Co., Engrs., Muskogee.
Minnesota	Baudette	Aug. 6, 4 p.m.	Bldg. water works, sewer system and elec. light plant; \$23,500.	O. Claussen, Ger.-Am. Bank Bldg., St. Paul.
Wisconsin	Madison	Aug. 10, 2 p.m.	Bldg. steam tunnels and piping, steam conduits, boilers, stokers, breeching and air compressor at Univ. of Wisconsin; also 2 water tube boilers of 350 h.p. each; 2 mech. stokers, etc.	M. E. McCaffrey, Secy. Univ. of Wis.
Kansas	Ft. Leavenworth	Aug. 12, 11 a.m.	Extending and making certain changes in electric lighting system and fire alarm system of post.	Capt. Wm. D. Davis, Q. M., U. S. A.
Manitoba	Winnipeg	Aug. 16	Five 3,000 k.w. generators, two 250 k.w. generators, etc.; six step-up transformers; light, heat, and power systems; protective apparatus; 3 electric traveling cranes; auxiliary apparatus. Smith, Kerry & Chace, Engrs., Toronto, Ont.	M. Peterson, Sec'y Bd. Control.
Ohio	Columbus	Aug. 18, noon	Furn. and installing complete electric lighting equipment in county jail, inc. fixtures, lamps, conduits, wires, etc.	John Scott, Clk. County Comrs.
Ohio	Fayette	Aug. 28	Bldg. electric light plant; village will contract to furnish not less than twenty 2,000 c.p. street lamps.	C. D. Hause, Village Clerk.
Missouri	Monett	Sept. 1, 8 p.m.	Material and labor for complete electric light plant for city; Corliss engine dir. con. to a. c. generator with apparatus; switch-board, arc regulators, arc lamps, poles, wire, Tungsten lamps, complete, 3 tubular boilers, stack, feed pump, feed water heater	Perry Short, Mayor.
MISCELLANEOUS				
New York	New York	Aug. 5, 3 p.m.	Furn. and erect iron railing around grass plots, B'way, between 92nd and 98th streets.	Henry Smith, Pres. Park Board.
New York	New York	Aug. 5, 3 p.m.	Furn. and delivering 5,000 ft. 3-4-in. rubber garden hose for pks.	Henry Smith, Pres. Park Board.
Pennsylvania	Wilkes-Barre	Aug. 5	Furnishing and delivering one or more motor-propelled or horse-drawn comb. chemical engine and hose wagon.	Fred H. Gates, City Clerk.
Maryland	Baltimore	Aug. 8, 11 a.m.	Removal and final disposition of street sweepings and other refuse from Aug. 8, 1909, to Aug. 8, 1910.	J. L. Wickes, Com. St. Cleaning.
Connecticut	Hartford	Aug. 9, 11 a.m.	Furnishing 3,000 ft. 2 1-2-in. webb double-gasket rubber-lined fire hose, coupled according to specifications.	Jos. Butts, Sec'y Bd. Cont. & Supply.
New York	New York	Aug. 9, 2:30 p.m.	Erecting six new gate posts on Blackwell's Island.	Dept. of Public Charities.
Massachusetts	Boston	Aug. 9, 2:30 p.m.	Excavating a channel in Charles river between Galen St., Water-town and first dam above; 6,000 cu. yds. excav., to be used for filling nearby; 10,000 cu. yds. excav., for filling below bridge and small amount of rock excav.; H. A. Miller, Ch. Engr.	Henry D. Yerxa, Chm. Chas. River Basin Commission.
So. Carolina	Charleston	Aug. 10	Erecting 2-story brick engine house; Henry F. Walker, Arch.	L. Behrens, Clk. Bd. Fire Masters.
Ontario	Ottawa	Aug. 15	Furn. iron posts as follows: At Winnipeg, 18,000 small and 200 large size; at Saskatoon, 12,000 small and 100 large size; at Edmonton, 10,000 small size.	Dept. of the Interior.
Georgia	Augusta	Aug. 17, noon	Furn. all materials, tools and labor and excavating drainage canal 3.5 miles long, 30 ft. wide and 6 ft. deep; Nisbet Wingfield City Engr.	F. B. Pope, Chm. Canal & Riv. Com.
Texas	Galveston	Aug. 30, 3 p.m.	Excav. 450,000 cu. yds. of material and cleaning and grubbing 67 acres of bayou timber; R. W. Luttrell, Engr.	B. F. Johnson, Sec'y Drainage Dist. No. 1.
Illinois	Chicago	Sept. 15	Furn. voting machines up to \$400,000 value.	Election Commissioners.
Kentucky	Guthrie	Oct. 1	Furn. and erecting 15-ton ice plant for Todd Co. Ice and Elec. Co.	L. M. Balee, Sec'y Ice & Light Co.

STREET IMPROVEMENTS

Birmingham, Ala.—The Board of Aldermen has authorized the purchase of equipment for the Street and Sanitary Department which will aggregate \$15,000. Street Commissioner McCartin, Mayor O'Brien, Chairman of the Street Committee, Chairman of the Police and Sanitary Committee and the Chairman of the Finance Committee have been appointed as a committee to purchase this equipment.

Birmingham, Ala.—Council is considering ordinances for the grading and paving of 17th st. from 9th to 11th ave.; improvement of 26th st. and the paving of Cliff road.—H. E. Shropshire, Jr., City Clerk.

Huntsville, Ala.—Council has shown that the paving of streets is to continue until many more of the principal streets are

covered with some character of material; after adopting a resolution providing that one-third of the expense of paving the streets be borne by the city government, the Madison st. paving ordinance was confirmed and the Holmes st. paving ordinance passed on its first reading; the first ordinance provides for about three-quarters of a mile of paving and the second for about a mile, running from the eastern to the western part of the city.

Mobile, Ala.—The Board of Aldermen is considering a \$3,000 appropriation for resurfacing St. Francis and St. Michael sts; 100 tons of asphalt for repair work will be ordered.

West End, Ala.—Council has ordered the improvement of Vine st. from McMillan ave. to Cotton ave.—J. P. DeJarnette, Clerk.

Ft. Smith, Ark.—County Engineer M. H. Reed, County Bldg., will prepare plans for

about 50 miles of concrete curb and gutter.—D. B. Sparks, City Clerk.

Ft. Smith, Ark.—Plans are being prepared by Engineer Geo. M. Myers, Kelly Trust Bldg., for 26 blocks of brick paving.—D. B. Sparks, City Clerk.

Little Rock, Ark.—City will pave with brick 6th st. from Center to Cove and Victory st. from 5th to 6th st.

Chico, Cal.—Council is now in the midst of procedure under the Local Improvement Act of 1901, the same as adopted at Woodland, to secure the improvement of the unaccepted streets of the city, preliminary to launching a bond issue of \$150,000 for municipal improvements; voluminous report of City Engineer M. C. Polk has been considered and three resolutions adopted setting forth the assessments to property owners and establishing August 23 as the date for hearing remonstrances to procedure and

to assessments; city has been divided into three districts for assessment. In District No. 1 the total cost has been estimated in the resolution at \$22,750; in District No. 2, \$9,732; District No. 3 has only one block, 6th from Main to Broadway, to improve, and the cost is estimated at \$200.

Woodland, Cal.—The City Trustees have ordered the City Engineer to prepare modified estimates for macadamizing Main st. from 3d to the railroad right-of-way and from Elm st. to Cemetery ave; Court st. from the railroad right-of-way to the west line of F. C. Ewert's property; Lincoln ave. from the railroad right-of-way to Walnut st.; College st. from Beamer st. to the south city limits; 1st st. from Main to Clover; 2d st. from Cross st. to Beamer st.; 3d st. from Cross st. to Beamer st., also a number of alleys.

Denver, Col.—Council has decided to spend \$60,000 for paving work in Market st. Paving District No. 2.

Naugatuck, Conn.—Borough Engineer Ham will experiment with oil on the streets of the borough very soon; experiments will be made on Maple and Church sts. near the town hall building; Board has appropriated the sum of \$15 to be used by the Engineer in his work and if he finds the oil is all right for laying the dust he will report the same to the Board and that body will take some action relative to buying a quantity of oil.

New Haven, Conn.—The Public Commission on Pavements has voted to ask the Board of Finance to secure an issue of \$100,000 bonds for the paving with wood blocks of Congress ave. in the vicinity of the hospital and several other streets.

Rockville, Conn.—Council is considering matter of grading streets to conform with grade of wall on High st.; cost \$8,000.

Washington, D. C.—Engineer Commissioner Judson has recommended to the Commissioners that Irving st. and the Soldiers' Home grounds and Warbler st. between Irving and Kenyon sts. be graded at an estimated cost of \$750, and that the roadway at D st. northeast between Tennessee ave. and the 13th st. car barn be placed in good order with old material.

Key West, Fla.—Citizens will vote on bonds for street paving.

Live Oak, Fla.—A committee has been appointed to confer with County Commissioners in regard to purchasing road machine.

Batavia, Ill.—Council has passed an ordinance for the improvement of Wilson st.—W. H. Reany, City Clerk; E. K. Wilson, Elgin, Engineer.

Joliet, Ill.—City is considering construction of macadam pavement on Hunter ave. from Morgan st. to McDonough st.; cost \$3,591.65.—Wm. S. Welch, Clerk Board of Local Improvements.

La Grange, Ill.—Bids will be received about August 22 by the Board of Local Improvements for constructing concrete curb and gutter and macadam pavements.—Wm. B. Ewing, 1003 Chamber of Commerce, Chicago, Engineer.

Marshall, Ill.—The Board of Local Improvements has adopted a resolution for paving with vitrified brick 6th st. from Chestnut to Mulberry st.; distance 12 blocks; cost \$32,290.—W. R. Paige, Terre Haute, Ind., Consulting Engineer.

Quincy, Ill.—The Board of Local Improvements has ordered paving with vitrified brick of Eleventh st.; estimated cost \$23,744.

Elkhart, Ind.—Citizens have petitioned for the paving of South 2d st. from Hickory to Prairie sts. to a width of 25½ ft. with standard material; Board of Works has ordered sidewalks laid on six streets.

Elkhart, Ind.—Under the law the City Engineer must file an estimate of the cost of a proposed pavement before the citizens' general hearing on the original resolution by the Board of Public Works, and this estimate must be for the most expensive material named in the resolution; in the case of the proposed Marion and Franklin st. pavements the most expensive material is bitulithic, and the Engineer's estimates are as follows: Marion from 2d st. to Franklin, total cost \$44,696.50; total number of sq. yds. of pavement is 16,736; lin. ft. of concrete curb and gutter, 6,072; cement curb, 1,224 ft.; cement gutter, 298 ft.; marginal curb, 1,234 ft.; sq. ft. of cement walk, 1,700; catchbasins, 30; inlets, 30; 8-in. sewer pipe, 1,282 ft.; 6-in. pipe, 711 ft. Franklin from 2d to Marion, total cost, \$30,700.50; sq. yds. of pavement, 12,645; curb and gutter, 5,901 ft.; curb, 801 ft.; gutter, 360 ft.; marginal curb, 754 ft.; sq. ft. of walk, 1,845; catchbasins, 14; manholes, 4; inlets, 26; old basins reset, 13; 8-in. pipe, 452 ft.; 6-in. pipe, 574 ft. Franklin from Marion to Indiana ave., total cost, \$26,908.15; sq. yds. of pavement, 10,152; curb and gutter, 4,034 ft.; curb, 384 ft.; gutter, 118 ft.; marginal curb, 536 ft.; sq. ft. of walk, 1,035; new catchbasins, 9; inlets, 16; old basin tops to be brought to line, 4; 8-in. sewer pipe, 336 ft.; 6-in. pipe, 402 ft.

Evansville, Ind.—Citizens are urging the asphaltizing of Illinois st.

Ft. Wayne, Ind.—The Board of Public Works has rejected the only bid received for repaving Calhoun st.; work will be re-advertised.—H. W. Becker, Clerk.

Huntington, Ind.—Council has passed an ordinance for grading Buchanan st. and improving Elm st. from Green to Joe st.—J. C. Bieber, City Clerk.

Indianapolis, Ind.—The Board of Works has adopted resolutions as follows: Michigan st., graded roadway and lawns; Eastern ave., gravel roadway; Schurmann ave., cement walks and curbing; Gladstone ave., paved roadway; Oakland ave., graded roadway and lawns.

Indianapolis, Ind.—The Board of Works has adopted the following resolutions: Rawls ave. from Audubon road to Arlington ave., cement walks and curbing; New st. from La Grande ave. to Raymond st., gravel roadway and curbing; alley east of Central ave. from 19th st. to 20th st., paved roadway; Ruckle st. from Highland drive to 42d st., local sewer; Park ave. from Highland drive to 42d st., local sewer; Broadway from Highland drive to 42d st., local sewer; first alley north of Lowell ave. from Ritter ave. to Layman ave., graded roadway, and first alley north of New York st. from East st. to Liberty st., paved roadway.

New Albany, Ind.—The Board of Public Works has adopted resolution for the improvement of East 10th st. from Spring to Market.

Petersburg, Ind.—Pike County has voted \$13,000 for construction of four miles of rock roads.

Richmond, Ind.—Council has passed resolutions for constructing cement sidewalks on North 12th st. from I to J st. and on N. E. st. from 20th to 24th st.

Vincennes, Ind.—The Board of Works has ordered the Clerk to advertise for bids for the improvement of Sycamore st. according to the resolution recently adopted by the Board; contract will be awarded August 3; City Civil Engineer has estimated the cost of improving Manila st. from 2d to Baret avenue at \$3,239.61.

Clinton, Ia.—Bids will be received about August 25 for paving 3d ave. with creosoted wood block; cost \$8,000.—R. C. Hart, City Engineer.

Creston, Ia.—Council has decided to pave North Maple and Spencer sts. with brick.

Hutchinson, Kan.—City will lay about 40,000 yds. of pavements; also about five miles of concrete curb and gutter; also some sewer extensions.—G. L. McLane, City Engineer.

Ottawa, Kan.—City has not let contract for 9,600 sq. yds. of 9-in. macadam paving, all bids being too high; work will be re-advertised.—F. A. Marcell, City Clerk.

Topeka, Kan.—A proposition in the form of a resolution from the County Commissioners has been presented to Council; County proposes that West 6th ave. be repaved by resurfacing the present macadam and oiling the road, the entire cost of such work within the limits of the city to be paid by the city, and that portion of the road outside of the city limits to be paid for by the county; as the communication from the County Commissioners was decidedly vague when it came to the matter of probable cost, it was agreed that Councilman Tandy, Chairman of the Committee, and City Engineer Rogers should call upon the County Commissioners in order to ascertain the facts of the proposition; petition to have Lime st. macadamized from 18th st. to 21st st. and Washington from 10th to 18th st., has been referred to City Engineer Rogers.

Wichita, Kan.—Council has ordered the laying of about two miles of paving on 13th st.; vitrified brick with asphalt filler will be used; cost \$125,000.

Bowling Green, Ky.—Council has passed an ordinance for constructing concrete sidewalks in a number of streets.

Louisville, Ky.—The Board of Public Works has decided to construct the following streets with vitrified brick: Bland from Burnett to Hill; Swan from Kentucky to St. Catherine; Samuel from Boyle to Dan-dridge; Dumesnil from 18th to 26th sts.; estimated cost of the entire work is \$36,000.

Salem, Mass.—The County Commissioners have opened bids for the \$50,000 loan on 18 months' note for the construction of Lynnfield st., Lynn, and awarded the loan to the City National Bank of Gloucester, the lowest bidder at \$3,559.

Detroit, Mich.—Council has directed the Department of Public Works to advertise for proposals for paving two alleys, 20 ft. wide, with vitrified brick, on concrete foundations.—J. J. Haarer, Commissioner.

Webb City, Mo.—Plans are being prepared by City Engineer A. J. McKenzie for 12,768 ft. of cement sidewalk on Towne st.; 3,500 lin. ft. cement curb and gutter and 6,700 lin. ft. cement curb and gutter on Towne and Liberty sts., and 2,500 sq. yds. brick paving on Dougherty st.

Atlantic City, N. J.—City has sold \$100,000 Albany ave. extension and \$20,000 paving bonds to the Provident Bank and Trust Co. of Cincinnati.

Nutley, N. J.—Experiment of oiling certain streets has proved so successful that Council has decided to treat all town roads in same manner.

Niagara Falls, N. Y.—Recommendation of Board of Public Works that Whirlpool st. from Bath to Chasm aves. be paved has been approved by Council; cost of the work will be \$16,308.10, of which \$795 will be for street intersections; Council also ordered construction of permanent sidewalks on Evershed st.; cost \$730.

Rochester, N. Y.—Council is considering the following first ordinances: Fillmore st., walks; Lamberton Park, resurfacing; Wetmore st., pavement; Keeler and Priscilla sts., walks; South Goodman st., pavement; Elmwood ave., walks; Ariel place, walks; Wolcott and McLean sts.; sewer; Raines Park, grading; Winton road south, pavement; also these final ordinances: Fillmore st., pavement; Aqueduct st., numbering; Rutgers st., pavement; Woodford st., pavement; St. Stanislaus st., walks; Aebersold and Miller sts., grading, walks and sewer.

Schenectady, N. Y.—City rejected the only bid received for \$360,000 grade crossing bonds and will again ask for bids. W. N. Coler & Co. were the only bidders, offering \$100,216 for \$90,000 of the total issue of \$360,000.

Schenectady, N. Y.—Council is considering the paving of Morris ave. from Union st. to Eastern ave.; also 2d, 6th and Van Gysling aves. and Lincoln st.

Greensboro, N. C.—Guilford County will macadamize 16 miles of road.

Grand Forks, N. D.—County received no bids for grading and repairing about four miles of county road.—Hans Anderson, Auditor.

Ashtabula, O.—Council has ordered the building of cement or stone walks on both sides of Columbus st. from Thayer Hill to Sibley st.; distance 1 mile.—F. W. Wagner, City Clerk.

Cincinnati, O.—City has awarded \$13,000 street bonds at \$296.50 premium to Western German Bank.

Fayette, O.—Citizens have voted \$12,000 bonds for street improvements.—C. D. Hause, Village Clerk.

Findlay, O.—City has awarded the \$15,000 road improvement bond issue to Davies-Bertram Co., of Cincinnati, at \$676 premium.

Hubbard, O.—Council is considering the grading of Christian ave. and the grading and sidewalking of East Liberty st.

Jefferson, O.—All bids opened by County Commissioners for constructing Jefferson Southern road, State Highway C, have been rejected on account of bids for tar treatment being in excess of the estimate; new bids will be received.

Mansfield, O.—The Board of Public Service will prepare an estimate for the improvement of Buffalo st.

Westerville, O.—Village will receive bids August 25, noon, for sale of \$9,000 bonds for the improvement of Walnut st.—Els-worth Horlocker, Clerk.

Youngstown, O.—Council has passed an ordinance authorizing the Directors of Public Service to enter into contracts for elimination of Spring Common grade crossing.

Youngstown, O.—The bond ordinance for \$110,000 issue for the opening of Chestnut st. has been passed by Council over the veto of M. C. Higgins, Acting Mayor.

Ada, Okla.—Shawnee, Main st. and Broadway and Townsend ave. are to be paved some time during the year.

Mulkey, Okla.—Citizens will vote August 14 on \$10,000 bonds for road construction.—Geo. Presley, President Wilson Township Board Directors.

Muskogee, Okla.—A contract will be let soon by the city for pavement of drives through East Okmulgee Park; G st. will be extended south between the park and the Spaulding grounds as far as Hartford ave.; driveways will be 25 ft. in width with parking of 50 ft.; material, oil macadam; Council will soon advertise for this work.

Sallisaw, Okla.—Paw Paw Township, Sequoyah county, has voted \$35,000 bonds for roads and bridges; public highway will start on the section line, north of bridge to Muskogee; road will pass about one mile south of Muldrow, but through Sallisaw and will cross Arkansas River at Webber's Falls; road will not be macadamized but it will be graded and put in first-class condition; road will also be built from the bridge north of Cherokee.

Portland, Ore.—East 7th st. between Thompson and Kilckit will be paved with asphalt.

Butler, Pa.—Council has decided to issue bonds to the amount of \$25,000 for the purpose of paying the borough's share of paving and other improvements already made or to be made during the present year.

Gallitzin, Pa.—Bids will be received August 12, noon, for constructing 8,500 sq. yds. of brick paving.—D. W. Dillman, Rooms 47 and 49, Altoona Trust Bldg., Altoona, Borough Engineer.

Yardley, Pa.—Town will issue \$8,000 worth of bonds for street improvements.

Landridge, Tenn.—Jefferson County Commissioners have rejected all bids for building seven miles of pike road; the work will be readvertised; \$200,000 bonds for road purposes have been sold.

Trenton, Tenn.—Citizens will vote on \$20,000 bonds for graveling the streets.

Morristown, Tenn.—Bids will be received August 23 for the purchase of \$200,000 road improvement bonds.—J. N. Fisher, Chairman Pike Commissioners.

El Paso, Tex.—El Paso County Commissioners will soon award contract for paving Anthony road.

Galveston, Tex.—The County Commissioners' Court has authorized the immediate repair of the county boulevard so that it can be made passable for vehicles.

Mexia, Tex.—The Commissioners' Court of Limestone County has made an appropriation which is to be used in building a rock road between Mexia and Tehuacana; road will be made under the instructions of J. L. Eldridge, who was sent here from Washington for that purpose.

Norfolk, Va.—The Board of Control has announced that a conference with the Finance Committee will be held in the near future for the purpose of discussing the means at hand for doing work on streets not included among those that are to get the benefit of the \$225,000 which the Councils recently appropriated for paving.

Kelso, Wash.—Council has passed a resolution for paving the principal streets at a cost of \$25,000.

Spokane, Wash.—Plans have been completed for grading, curbing, parking and sidewalk Main ave., area of 11,200 sq. ft.; estimated cost \$1,565; 15th ave., an area of 186,770 sq. ft., estimated cost \$3,150; 9th ave., area of 191,250 sq. ft., estimated cost \$3,950; Hamilton st., an area of 38,293 sq. ft., estimated cost \$1,700; and Fairview ave., an area of 219,000 sq. ft., estimated cost \$3,950.

Tacoma, Wash.—Council has passed ordinances for the improvement of South Tacoma ave. from South 17th to 27th sts.; South O st. from 35th to 56th sts., and South 60th st. from Union ave. to Adler st. and others.

Bluefield, W. Va.—City will extend and macadamize Princeton ave.

Oconto, Wis.—City will pave Collins st. with creosote blocks or vitrified brick.

Sheboygan, Wis.—The Board of Public Works will pave Michigan, Pennsylvania and Superior Aves., National Court, N and S sts., North 12th, Huron ave. and South River st.

Niagara Falls, Ont., Can.—The Queen Victoria Park Board is considering the extension of the boulevard from Queenston to Fort Erie through Bridgeburg and Fort Erie to the old Fort Grounds.

BIDS RECEIVED AND CONTRACTS AWARDED

Bessemer, Ala.—City has awarded contract to C. M. Burkhalter & Co., Birmingham, to lay sidewalk on Berkeley, Darts-mouth and Clarendon aves., at 39c. per yd. for curbing and 82c. for cement work; total cost, \$3,610.54.

England, Ark.—Commissioners of Improvement District have awarded contract to Hot Springs Construction Co. to construct eight miles of concrete sidewalks.—R. E. L. Eagle, Chairman.

Pasadena, Cal.—J. E. Haddock has been awarded a contract for improving Summit ave. as follows: Grading, 58c. per lin. ft.; curbing, 23c.; gutter, 14c.; oiling, 40c.; total bid, \$7,416.53. Totals of other bids were: W. A. Donlonville, \$7,458.44; D. Degryse, \$8,335.98; J. C. Kinsman, \$8,534.32; D. C. Harwood, \$7,597.24; Chamberlain & Williamson, \$7,467.42.

Andrew Holloway has been awarded a contract for improving Peoria st. at the following prices: Paving with broken stone, per sq. ft., 6½c.; grading, per lin. ft., 15c.; curb, per lin. ft., 20c.; gutter, per sq. ft., 13c. Total bid, \$1,202.—Heman Dyer, City Clerk.

Hartford, Conn.—Contracts for the construction of State road work, bids opened July 21, have been awarded as follows:

Town of Vernon, 5,222 lin. ft. macadam telford, to Lane Construction Corporation, Meriden, at \$1.46 per lin. ft. for macadam and \$1.98 for telford; other bidders were: Amos Bridge's Sons, Hazardville, \$1.82 and \$2.42; A. Brazos & Sons, Middletown, \$1.76 and \$2.30; A. E. Douglass, Glastonbury, \$1.56 and 2.10.

Town of Easton, 1,450 lin. ft. heavy grading, with railing, including two 24-in. tile culverts, to E. P. Mills, Westport, at \$2.75 and 40c. per lin. ft. for railing; other bidders

were: Eveline Bros., New Britain, \$9.750 and 40c.; Goodman & Trumbull, Litchfield, \$7.484 and \$1; B. D. Pierce, Jr., Co., Bridgeport, \$13,500 and 70c.

Town of Redding, 2,700 lin. ft. grading and telford, including two 15-in. tile culverts, to Goodman & Trumbull, Litchfield, at 42c. per lin. ft. for grading and \$1.07 per lin. ft. for telford.

Town of Norfolk, 2,601 lin. ft. macadam telford and railing, to the Board of Selectmen, at \$1.65 per lin. ft. for macadam, \$2.25 per lin. ft. for telford and 25c. per lin. ft. for railing; Goodman & Trumbull, Litchfield, Conn., only other bidder, bid \$2.12, \$2.95 and 40c.

City of New Britain, 3,035 lin. ft. macadam and cobble gutters, to A. C. Sternberg & Sons, West Hartford, at \$1.46 for macadam and 54c. per sq. yd. for gutter; other bidders were: Connecticut Contracting Co., New Britain, \$1.75 and 50c.; Lane Construction Corporation, Meriden, \$2.07 and 60c.

Bids were also received for the following, but contracts were not awarded: Town of Southington, 9,104 lin. ft. macadam telford, A. Brazos & Sons, Middletown, \$1.68 for macadam, \$2.54 for telford, \$2.53 per sq. yd. for brick work, and 80c. per sq. yd. for gutters; Pierson Engineering and Construction Co., Bristol, \$1.75, \$2.35, \$2.50 and 65c.; C. W. Tryon, Meriden, \$1.62, \$2.42, \$2.38 and 65c. Town of Hebron, eight sections of gravel and grading work, aggregating 7,671 lin. ft., including two 20-in., one 24-in. and one 15-in. tile culverts, Amos Bridge's Sons, Hazardville, \$14.992; A. Brazos & Sons, Middletown, \$14.980.

New Castle, Del.—County Levy Court has awarded contract for building about 2½ miles of road from St. Ann's to Blackbird to Theobald Harsch for \$13,183.70, and for the road from Christiana to Cooch's bridge to John H. Clark for \$12,400.

Wilmington, Del.—Two bids were opened by the Levy Court for building the mill dam road in Christiana hundred, a distance of half a mile, but the court rejected both and took action with respect to asking for new ones. The bids rejected follow: Stewart & Donohus, \$2,900; Trustees of New Castle County Workhouse, including use of the county's steam roller and sprinkler, \$2,168.

The contract for building a road from St. Ann's to Blackbird, a distance of about 2½ miles, was awarded to Theobald Harsch at his bid of \$13,183.70. The contract for building the road from Christiana to Cooch's Bridge was awarded to John H. Clark at his bid of \$12,400.

Moine, Ill.—Following are bids received by Board of Local Improvements for paving with asphalt on 5th ave. from 1st to 7th sts: McCarthy Improvement Co., of Davenport, Ia., \$19,675, awarded contract; M. H. McGovern Co., \$20,650.

Peoria, Ill.—The Board of Local Improvements received two bids for the paving of South Adams st., from Oregon st. to the city limits, with brick on a gravel foundation; the engineer's estimate of the cost of the work is \$7,000, and the distance is about one-third of a mile. The bidders were D. A. Meyers and John McAllister, and the bids were referred to the Commissioner of Public Works and the City Engineer.

Elkhart, Ind.—The Board of Public Works has awarded contract for paving with macadam Prairie st. to the Andrews Asphalt Paving Co. for \$17,172.

Indianapolis, Ind.—Bids were received as follows: Washington boul., from 30th st. to 32d st.—Wooden block, Hoosier Construction Co., \$5.84; asphalt, Union Asphalt Construction Co., \$5.18; bitulithic, Union Asphalt Construction Co., \$5.43; wooden block, Manley-O'Donnell Co., \$5.82; wooden block, J. E. Sullivan, \$5.65.

First alley east of Central ave., from 24th to 25th sts.—Brick, Lanson & Kincaid, \$1.84.

Eleventh st., from Beville ave. to first alley east on north side, and to Keystone ave. on south side.—Sidewalks, William H. Hall, \$1.05.

First alley west of Senate ave., from Indiana ave. to Michigan st.—Indiana paving block, Lawson & Kincaid, \$1.18.

Mishawaka, Ind.—The Western Construction Co. has been awarded contracts aggregating over \$100,000 for more than 2½ miles of pavement: Trinidad asphalt will be used on West 2d and West Joseph sts., and bitulithic will be given a trial on Main and Cedar sts.; the Peters Bros. Paving Co. threatens an injunction on the work.

Richmond, Ind.—The city has awarded a contract to Bootes & Gant, of Greenfield, for the construction of 19 blocks of cement sidewalks, curbs and gutters; cost will exceed \$15,000.

Des Moines, Ia.—The only bid opened by Council July 14 for paving Southwest 9th st. was submitted by J. C. Likes, 223 Locust st., at \$1.54 per sq. yd. for tar macadam and \$1.97 for brick.

Muscataine, Ia.—Bids were opened July 15 for paving with brick Improvement District

No. 25, foundation 5 in. concrete, 1 in. sand and the contract has been awarded to R. K. Smith at the following bid: 9,700 cu. yds. excavation, 32c.; 21,728 sq. yds. brick pavement, \$1.53½; 9,637 lin. ft. curb, 57½c., and 600 cu. yds. extra concrete, \$3; total cost, \$43,798; Galesburg brick to be used.—Jas. J. Ryan, City Engineer.

Fort Riley, Kan.—W. H. Hoerath, Junction City, at 17½c. per sq. ft., was low bidder on July 15 for constructing 16,666 sq. ft. of concrete walk.

Iola, Kan.—Contract for macadamizing a portion of North Central ave. has been awarded to John T. Rustamier, of Chanute, for \$5,515.

Ottawa, Kan.—M. E. Stucker, city, has been awarded contract, at \$1.44 per sq. yd., for constructing 16,400 sq. yds. of two-course brick pavement, and at 39c. per lin. ft. for 7,170 lin. ft. of concrete curb.

Lafayette, La.—City has awarded contract to West Construction Co., Chattanooga, Tenn., to construct cement walks along Congress and Washington sts.—G. A. Martin, Mayor.

Lake Providence, La.—City has awarded contract to the John Houchin Co., Jackson, Miss., for constructing three miles of concrete sidewalk.

New Orleans, La.—The Finance Committee of City Council received two bids for paving Chartres st., from Elysian Fields to Frenchmen, with asphalt, from the Barber Asphalt Co., and W. H. Douglas, and the lowest was Douglas, at about \$2.60; the contract involves about \$5,000.

Bids were opened also to furnish the Belt Railroad with 19 crossings at intersections of Elysian Fields st. with the tracks of the M. L. & T. Railroad; bids were made by Lorain Steel Co., Kelly Frog & Switch Co., Cincinnati Frog & Switch Co., Ajax Forge Co., Pennsylvania Steel Co., St. Louis Frog & Switch Co., Weir Frog Co., Elliott Frog & Switch Co., Indianapolis Frog & Switch Co., and Morden Frog & Crossings Co. The bids were referred to the Engineer of the Belt Road to tabulate, but those of the Pennsylvania Steel Co. and the Elliott Frog & Switch Co. were rejected because they were not written on the forms prepared by the Belt Commission, and were therefore considered informal.

Baltimore, Md.—The Highways Commission of the county has decided to award the contract for paving 1st ave., Canton, from Clinton to 8th st., to P. Flanagan & Son, with vitrified brick on concrete, for \$22,864.50, the lowest bid received; other bidders were P. Reddington, \$23,232; F. E. Schneider Paving Co., \$24,385, and Nicol & Bro., \$27,795.50.

Boston, Mass.—Superintendent of Streets Emerson has awarded two contracts for constructing granolithic sidewalks to Jas. Doherty; one was for sidewalks on Mount-ain ave. between Lauriat and Ballou ave., Dorchester, for \$1,887, and the other was for sidewalks on Haviland st. between Massachusetts ave. and Hemenway st., Ward 11, for \$477; Doherty was the lowest bidder for each contract.

Boston, Mass.—The following are the bids opened July 19 for paving Linden Park, Vernon, Whitier, Ruggles, Downing, Simpson and Hampshire sts., as follows: John E. Burns, \$46,535; W. J. Barry, \$47,550; J. B. O'Rourke & Co., \$47,937; F. H. Cowin & Co., \$48,597; Coughlan & Sheils Co., \$49,779; Simpson Bros.' Corporation, \$50,759; Coleman Bros., \$51,037; J. Doherty, \$51,417; J. H. Ferguson Co., \$56,843; D. F. O'Connell Co., \$56,870; D. E. Lynch, \$58,139, and Patrick McGovern, \$58,519.

Lawrence, Mass.—Philip Holland has been awarded the contract by the Board of Aldermen to install the granolithic sidewalks on Essex st., at \$1.30 per sq. yd., the job to cost \$13,000; bids were as follows: William P. Rae, finished pavement, \$1.40 per sq. yd. and 15c. per cu. yd. for extra excavation, Jeremiah J. Sullivan, Boston, \$1.57½, or 17½c. per sq. ft. for pavement, and \$1.25 per cu. yd. for extra excavation, W. E. Hassam Co., Worcester, \$1.49 and 50c. M. O'Mahoney, \$1.27, and 10c. for extra excavation, Joseph Wagenback & Sons, pavement, \$1.57 sq. yd., and 70c. per cu. yd. for extra excavation.

William Heinrich didn't sign his name to his bid, but Alderman Moss moved to accept the bid and it was so voted; the bid was as follows: For finished pavement, \$1.34 per sq. yd., and 60c. for each cu. yd. of extra excavation.

Philip Holland, finished pavement, \$1.30 sq. yd.; extra excavation 50c. cu. yd. Warren Bros., Boston, for finished pavement, \$1.33 per sq. yd., and 33c. per cu. yd. for extra excavation, W. A. Murfelt, Boston, for sq. yd. finished pavement, \$1.44; for cu. yd. extra excavation, \$1.44. Simpson Bros. of Boston, finished pavement, \$1.34½ sq. yd.; extra excavation, \$1 cu. yd.

Bay City, Mich.—Board of Works has awarded contract for the Water st. pavement to Van Poppelen & Munley, a new firm; six bidders were after the job; Van Poppelen & Munley bid lowest, \$15,540.31.

The other bids were all above \$15,000. The new firm has contracted with the New Era Vitified Brick Co. for its brick supplies.

Grand Rapids, Mich.—The Rudolph Blome Co. has been awarded a contract for paving 3d st. with granite.

Houghton, Mich.—Council has awarded contract for paving with bitulithic Hancock st., to Central Bitulithic Paving Co., for \$27,761.

Kimball, Mich.—F. Porath & Sons, Detroit, have secured contract for macadamizing about 10 miles of road, for \$23,000.—Wilford Tomlinson, Commissioner of Highways.

Minneapolis, Minn.—The lowest bid received for macadamizing two miles of road in Edina Mills was submitted by Buckley & Kennedy, at \$6,749, and the lowest for macadamizing six miles in Orono Township by Turnham & Talbert, \$20,145.

St. Paul, Minn.—Contract for macadamizing Mississippi st. has been awarded to Lauer & Pendergast for \$10,300.

Independence, Mo.—Jackson County has awarded contract to Davidson Bros., Kansas City, for grading road south and west from Dallas, distance of 5,900 ft., at \$3,255.

Omaha, Neb.—Ten bids for paving four miles of streets were opened by Council on asphalt, vitified brick block, artificial stone and creosoted wooden block pavement; the paving firms offering bids include Hugh Murphy, C. E. Fanning, Bryant, Ford & McLaughlin, National Construction Co., E. D. Van Court, C. D. Woodworth Co., Beebe Cement Paving Co., Barber Asphalt Paving Co. and the Kettle River Quarries Co. Hugh Murphy presented the lowest bids on most of the work, while the bids for creosoted wooden blocks were the highest.

Bayonne, N. J.—Broadway paving contract has been awarded to W. T. S. Crichfield, who is connected with the Uvalde Asphalt Co.; his bid of \$166,975 was the lowest for the entire work; the next lowest bidder was the New Jersey Contracting Co., \$170,035. There were eight other bids for bitulithic, asphalt and bituminous concrete. Council determined a couple of weeks ago to have the street paved with bitulithic, for which there were five other bids beside that submitted by Mr. Crichfield. The latter won the contract by underbidding his opponents for the bitulithic pavement. His bid was \$1.40 per sq. yd. or \$109,200 for the entire amount. The United Paving Co. and the New Jersey Contracting Co. each bid \$1.75 per sq. yd.; the Atlantic Bitulithic Co., \$1.76; the Standard Bitulithic Co., \$1.77, and Warren R. Keith, \$1.80. Councilman Collier said the bid was unbalanced and called Mr. Crichfield's attention to the fact that while he was low on bitulithic he was high on excavation, his bid being 25, while others bid as low as 11c.; that he bid \$6.50 for concrete, while others bid as low as \$4.40; that his bid for bluestone curbing was \$1 a ft., while other bids were as low as 58c.; that his bid for bridgestone relaid was 20c., while other bids were as low as 9c.; that his bid for new receiving basins was \$100, while other bids were as low as \$35, and that his bid for sewer pipe was \$2.50 as against 50c. Mr. Crichfield replied that he considered his bid fair and would not alter it. In reply to City Attorney Demarest Mr. Crichfield said he had not figured how much concrete and curbing would be needed. City Engineer Dalrymple said

that the quantities would have to be doubled to make Mr. Crichfield's bid as high as the others. Several times Mr. Crichfield declined to say whether he would enter into a contract with the Warren Brothers for the supply of bitulithic. The specifications state that this certain pavement shall be used. Mr. Crichfield remarked that he thought he understood bitulithic pavement from top to bottom, and said the Council might just as well quiz him regarding the kind of sand, stone or cement he intended using as the kind of bitulithic. He declared there was nothing in the specifications to make him make a contract with Warren Brothers.

Newark, N. J.—Contracts for repaving portions of Rector st. and Nichols st. with bitulithic were recently awarded to J. F. Shanley Co., at \$7,579 and \$7,393 respectively.—M. R. Sherrerd, Chief Engineer Street and Water Board.

Perth Amboy, N. J.—The Barrett Mfg. Co. has been awarded a contract for 10,000 gallons of road preparation.

Trenton, N. J.—The Filbert Co. has been awarded the contract for resurfacing Olden ave. from Clinton ave. to the creek, with filbertine; T. J. McGovern was awarded the contract for macadamizing Behm st. from Jefferson to Escher.

Buffalo, N. Y.—Commissioner of Public Works F. G. Ward opened bids, July 22, for repair and maintenance of asphalt pavements for the fiscal year ending June 30, 1910, the H. P. Burgard Co., the German Rock, Asphalt & Cement Co., and the Barber Asphalt Co. being the only bidders.

Buffalo, N. Y.—The Barber Asphalt Paving Co., 880 Ellicott sq., submitted low bid for paving portion of Elmwood pl., at \$26,300 for tar macadam base, and \$31,300 for concrete base.

Lyons, N. Y.—The work of paving Water st., which contract was let to the firm of Julius Friederich & Co., of Rochester, will be started very soon; cost about \$3,000.

New York, N. Y.—Bids were opened July 21, by John F. Ahearn, President Manhattan Borough, for regulating and paving with asphalt block, on concrete foundation, Sherman ave., from Broadway to 10th ave., and the lowest bid was that of the Harlem Contr. Co., 2 Rector st., as follows: 28,275 sq. yd. asphalt block pavement, \$1.49; 5,102 cu. yd. Portland cement concrete, including mortar beds, \$6; 3,300 lin. ft. new bluestone curb, furnished and set, \$1; 5,100 lin. ft. old bluestone curb, redressed, re-jointed and reset, 35c.; total, \$77,827. The Barber Asphalt Co., 50 Church st., bid for this work \$80,004.

The following are the bids opened July 21 for regulating, grading, curbing, flagging, etc., and constructing retaining walls on (a) Arden ave., and constructing retaining walls on (b) Thayer ave.: W. T. Seals, (a) \$36,127, (b) \$31,149; P. J. Duffy, 132d st. and St. Ann's ave., (a) \$38,082, (b) \$29,097; C. W. Collins, 91 Fordham road, (a) \$33,417, (b) \$27,308; Haggerty Contracting Co., 2159 Davidson ave., (a) \$30,758, (b) \$23,632; D. W. Moran, 563 Burnside ave., (a) \$22,901, (b) \$29,033; Voorhees-Sullivan Contracting Co., Marion pl., (a) \$34,035, (b) \$28,625; W. H. Masterson, 177th st. and Walton ave., (a) \$27,232, (b) \$27,308.

Peekskill, N. Y.—Board of Highway Commissioners has awarded contracts for permanent improvement of Montrose Sta-

tion road, to John Smith, Jr., at \$1,722, and Westchester ave. to Travis & McCord, for \$3,200.

South Nyack, N. Y.—Bids were opened July 19 for sidewalk improvement on South Broadway, and contract has been awarded to Eldridge & Grannis, of Ossining, as follows: Concrete, 22c. per sq. ft.; setting curb, 24c. per lin. ft., and laying gutter, 10c. per lin. ft.—Alfred Thomas, Village Clerk.

Syracuse, N. Y.—The Central City Paving Co. has secured contract to pave with asphalt on Orange st., at \$27,600.

The following were the bids received July 19 by the Board of Contract and Supply for paving Marcellus st.: (a) sandstone, (b) bitulithic, (c) brick or block, (d) asphalt, (1) with brick in railroad strips: Warner-Quinlan Asphalt Co., (a) \$53,726; (a 1) \$43,576; (b 1) \$44,448; (b) \$45,074; (c) \$43,876; (d 1) \$43,813; F. J. Baker, (b) \$43,047; (b 1) \$42,699; (c) \$40,476; (d 1) \$42,318 and \$41,086; Nicholas Marnell, (c) \$41,756 and \$41,091; Samuel Bonn, (c) \$40,890; J. W. Bustin, (c) \$39,753; Central City Paving Co., (c) \$45,715; (d 1) \$45,207; Gaffey & Burnes, (c) \$39,338.

Syracuse, N. Y.—The Board of Contract and Supply received bids for paving Laurel st. between Fulton and Franklin sts as follows: Samuel Bonn, \$3,048.20; F. J. Baker, \$3,098.25; Warner-Quinlan Co., \$3,290.30; Gaffey & Burnes, \$3,093.55, and N. Marnell, \$3,420.95.

The Board entered into contract with James Barr to lay cement sidewalk on the north side of East Genesee st. between Westcott st. and the city line, for \$633.50, and Samuel Bonn got the contract for an 18-in. sewer in West Lafayette ave. from Midland ave. to No. 305 West Lafayette ave., to cost \$245.

Troy, N. Y.—Proposals for a concrete sidewalk on Pawling ave., near Monroe court, were received from the following: De Freest & Becker, 16c. a ft.; George D. Smith, 16c. a ft., and 18c. if cinder filling is used; John Sheehan, 16c. a ft.; James McBride, 13c. a ft., and 15c. if cinder filling is ordered. For laying a concrete walk on Congress st., from River to Front st., Geo. D. Smith bid 22½c. per ft., John Sheehan, 22c., and James McBride, 17c. a ft.

Troy, N. Y.—Proposals for grading and curbing 13th st. were received by Board of Contract and Supply, as follows: John F. Daley—Excavation, 40c. per yd.; curb, 90c.; cobble stone gutter, 90c.; catch basins, \$90 each; gravel surfacing, 75c.

John Flynn, Jr.—Excavation, 42c.; curb, 95c.; catch basins, \$100 each; cobble stone gutter, 80c.; gravel surface, \$1.10.

John H. Gleason—Excavation, 50c.; curbing, 90c.; cobble stone gutter, 80c.; catch basins, \$90 each; gravel surface, \$2 per yd.

John Mullin—Excavation, 50c.; curb, 21c.; cobble gutter, 79c.; catch basins, \$100 each; gravel surface, 70c.

Utica, N. Y.—Work on the first section of the new Pleasant ave. parkway will begin at once, as contract for road work proper has been awarded to Harry W. Roberts & Co.; section extends from Genesee st. to Elm and ranges in width from 150 to over 200 ft.; the pavement is to have a macadam foundation and a bituminous binder or top coat. The contract for the sewer work was awarded to James W. Johnston. The bid of Roberts & Co. was in the sum of \$24,436.65. It was not the lowest bid, but the Board believed that, under the circumstances, it was advisable to accept it. Mr. Johnston's bid for the house sewers was in the sum of \$1,171.50 and was the lowest one submitted for that work. John R. Baxter, Jr., who was the lowest bidder for the road work, was displeased with the action of the Board in awarding the contract to a higher bidder and threatened a property owners' suit to restrain the Board in its action. Mr. Baxter's bid was \$23,782.40.

Akron, O.—Bids were opened July 27 by the Service Board for the paving of seven streets and the construction of three sewers, the biggest amount ever opened at one time by any Akron Service Board. The lowest bids on the street paving jobs were as follows: Washington st. paving, from Exchange st. to Voris st.; Hunt & Wigley, \$15,607. Kling st. paving, from Exchange to Powers st., Wildes & Davidson, \$7,124.65. Grand ave. paving, from Market st. to Portage path, O'Neill & McCausland, \$4,956.63. Ladd st. paving, from Market to the end of the street, Dan O'Marr, \$1,748.80. Howard st. paving, from the Cuyahoga River bridge to Olive st., Wildes & Davidson, \$14,163.79. Bowery st. paving, from Woster ave. to Thornton st., E. McShafrey & Son, \$26,065.74. Payne ave. paving, from Beck ave. to Dodge ave., E. McShafrey & Son, \$3,141.36.

Cincinnati, O.—Considerable surprise was expressed at the meeting of the County Commissioners, July 23, when seven firms submitted bids, on three contracts for oiling county roads; heretofore it has been difficult to secure more than one or two

Dover, Del.—Abstract of bids received July 12 by the Street and Sewer Commission, George L. Watson, Chief Engineer, contract for which was awarded, as stated last week, to the United Paving Co., Atlantic City, N. J.

ITEMS	Quantity	Barber Asphalt Co., Philadelphia, Pa.	United Paving Co., Atl. City, N. J.	Standard Bitulithic Co., N. Y. City, N. Y.	Atlantic Bitulithic Co., Richmond, Va.
Excavation.....	6,500 cu. yds.	\$0.51	\$0.55	\$1.00	\$0.64
Embankment.....	450 "	.56	.80	.40	.64
Junction chamber.....	1 "	3.40	140.00	300.00	250.00
Standard manhole.....	16 "	75.43	48.50	54.00	61.00
Special manhole.....	4 "	87.15	48.50	70.00	65.00
42-inch pipe.....	890 "	3.98	4.50	7.25	5.48
30 ".....	1,980 "	2.14	2.60	3.00	3.10
20 ".....	580 "	1.09	1.10	1.20	1.20
18 ".....	1,480 "	.83	.92	.86	.83
12 ".....	716 "	.56	.50	.50	.61
10 ".....	310 "	.53	.41	.37	.44
Type "B" catch basin.....	38 "	101.85	59.00	150.00	78.00
" "A" curb.....	3,053 lin. ft.	.81	.78	.83	.75
" "C" gutter, 30".....	3,000 "	.525	.32	.28	.33
" "C" gutter, 18".....	12,500 "	.42	.20	.18	.21
" "P" header curb.....	2,000 "	.63	.45	.43	.45
" "A" curved curb, 30".....	200 "	.95	1.00	1.03	.99
" "A" curved curb, 18".....	200 "	.91	.88	.93	.83
Brick pavement.....	24,000 sq. yds.	2.665	2.665	2.74	2.665
Asphalt pavement.....	24,000 "	1.99	2.17	2.25	2.17
Bitulithic 4" concrete.....	24,000 "	2.19	2.19	2.25	2.30
Bitulithic excavation.....	24,000 "	1.15	1.15	1.16	1.18
Sewers.....		19,485.84	18,924.70	28,658.00	
Curb and gutter.....		10,938.03	7,125.14	6,884.29	
Asphalt paving.....		47,760.00	52,080.00	54,000.00	

bids on asphalt oil, and the Standard Oil Co. has generally been low; the Indian Refining Co. has now submitted bids, and will probably secure three contracts; it agreed to furnish oil at \$.0275 per sq. yd. Three and four cents per sq. yd. was the price formerly paid. The three contracts awarded were for the treatment of the Montgomery pike, from Silverton to the county line, with asphalt oil, estimated cost \$2,610; the Cleves and Bridgetown pike, from Harrison pike to Cleves, with asphalt oil, estimated cost \$2,069, and the Reading pike with asphalt oil, from Sharon ave. to the county line, estimated cost \$711. There were seven bidders on all three contracts, but the Standard Oil Co. and the Indian Refining Co. were the lowest. It is thought that the Indian Refining Co. was low on all three contracts, as it offered to spread the oil for \$.0275 per sq. yd. The contracts include screenings and other material.

Columbiana, O.—James Nixon, Clarington, Pa., has secured contract for grading and paving about 1½ miles of State highway, for \$10,782.

Columbus, O.—Contractor A. G. Pugh has deposited with the Board of Public Service his guarantee bond for the contracts awarded him for improvement of sections of Oakwood, Eastwood, Ohio and Jefferson aves.; the bond amounts to \$36,011.25. That for Ohio and Oakwood aves. is signed by Julius F. Stone and R. S. Rhoads, while that for Eastwood and Jefferson aves. is signed by those named and Irving M. Jones. In spite of the fact that the bond was not filed within a specified five days, the contract will not be invalidated and the work will proceed at once unless attacked by injunction; the contracts involve almost \$70,000.

Dayton, O.—Getting tired of waiting on the residents to enter into a private contract, the Service Board gave to David Onkst the contract for improving Stoddard ave., from Forest to Belmonte; the price is \$1,760.

Hamilton, O.—The County Commissioners received bids for resurfacing High and Main st. bridge with creosote block material; there were two aspects to the bids, one based on 16 lbs. of oil to the cu. ft., and the other on 20 lbs.; on the 1,960 cu. ft. of bridge surface the engineers estimate was \$2.10 for 16, and \$2.30 for 20 lbs. of oil to the cu. ft. The bids were as follows:

	16 lbs.	20 lbs.
Capital Construction Co.	.....\$2.00	\$2.20
Aynkoop, McGormley Co.	.....	2.10
Garver Contr. & Transfer Co.	.....	1.86
Andrews Asphalt Paving Co.	.....	1.95
		2.10

The contract was awarded to the Garver Contracting & Transfer Co., at their bid for the 20 lb. block, of \$1.99 per cu. ft., or \$2,900.40.

Ironton, O.—Bids for repairing a number of sidewalks, opened July 27, are as follows: F. W. Henninger, for brick, 8c; concrete, 9c.; Ironton Construction Co., cement, 7.2c.; E. Bradley, cement, 6.9c.

Norwood, O.—The following are the bids opened by the Board of Public Service for paving with granite blocks a portion of Main ave.: John Snyder, \$118,962; J. O. Shoup & Co., \$116,560; Edw. Ryan, Springfield, O., \$115,300 (awarded contract); Thos. P. Strack, \$128,890; M. Sullivan & Sons, \$137,165; Aug. J. Henkel, \$129,615; Kirchner Construction Co., \$119,515; J. M. Quill, \$120,425; George Murdock, \$119,425; J. T. O'Brien, \$133,070.

Orrville, O.—Shannon & Wilderson, city, have been awarded contract at \$6,900 for paving and curbing with brick a county tract here.—J. H. Villard, Chairman Board County Commissioners.

Stuebenville, O.—Rosser & Maloney have secured contract to pave Mingo road, at \$25,107.

Toledo, O.—Influenced by the good results from treating a short piece of the Stickney ave. stone road to a tar preparation, the County Commissioners have provided for the use of two tar preparations in repairing the Monroe st. stone road from Wamsher's corners to Sylvania. They let the contract for repairing the road to James Sheehan at \$1.18 a ton for crushed stone and 93c. a gallon for oil preparation; cost \$14,000. For the repair of the Ludwig stone road from the east end of the river bridge in Providence Township the Commissioners contracted with Charles Patton, who agreed to furnish stone at \$1.21 a ton; engineer's estimate, \$2,000.

Ada, Okla.—Street improvement bonds for paving 12th st. have been sold to Barto, Scott & Co., of Columbus, O., and paving will begin at once as contract has been let to the Metropolitan Engineering Co. of Kansas City.

Chandler, Okla.—Contract for paving Manvel ave. and 8th st. has been awarded to H. R. Postle, Chief Engineer of the Petrolithic Pavement Co.; paving was let at \$1 a yd., and combined curb and gutter, at 50c. per lin. ft. There is 933 sq. yds. of pavement in a block, and 600 lin. ft. of

curb and gutter, making a total cost of \$1,233.

Chester, Pa.—Contract for paving portions of 10th and 11th sts. with asphalt has been awarded to Barber Asphalt Co., of Philadelphia, at \$1.94 per sq. yd.—W. T. Cullis, City Clerk.

Doylestown, Pa.—The Supervisors of Horsham Township, Montgomery county, have awarded contract for macadamizing about four miles of road in the township to the Ambler-Dana Co., at about \$26,000.

Fortyfort, Pa.—The B. G. Coon Construction Co., Wilkes-Barre, has secured contract for paving Wyoming ave. with Clearfield brick; 56,000 yds. of paving and about 4 miles of Wainwright steel protected curb; cost about \$130,000, to be completed November 1, 1910.

Garrett, Pa.—Contract for paving has been awarded to Hoblitzell & Price, or Meyersdale.

Harrisburg, Pa.—Bids were opened by Highway Commissioner Caldwell, July 24, for the paving of Front st., from Calder to Kelker, and Penn st., from Maclay to Woodbine sts., and the Warner-Quinlan Co. was the lowest bidder of the three on both streets, bidding \$1.59 per sq. yd. It, however, did not get both awards, as the Central Construction & Supply Co. was the lowest bidder on the curbing of Front st. The bids follow:

Front st.—Barber, for sheet asphalt paving, \$1.63 per sq. yd.; steel bound granolithic curbing, 50c. per lin. ft. Central Co., asphalt, \$1.60; curbing, 50c. Warner-Quinlan Co., asphalt, \$1.59; curbing, 54c.

Penn st.—Barber Co., asphalt, \$1.63; Central Co., asphalt, \$1.65; Warner-Quinlan Co., asphalt, \$1.59. The Warner-Quinlan Co. was given the contract—subject to the approval of Councils—for the paving of Penn st., as there is no question as to its being the lowest of the three bidders.

The Warner-Quinlan and the Barber companies bid within 1c. of each other for the work on Front st., the former company being the lowest bidder at \$1.59; the Central Co.'s bid of 50c. per ft. for steel-bound granolithic curbing was, however, 4c. below that of the Warner-Quinlan Co.

There are 6,450 sq. yds. to be paved on Front st., and the curbing amounts to 3,780 lin. ft. For the paving and curbing of the street, the Central's bid was \$12,210, while the Warner-Quinlan's bid was \$12,296.70. The Central Co. is therefore \$86.70 lower than its nearest competitor.

Latrobe, Pa.—Bids were opened, July 19, for grading, curbing and paving portions of Lloyd ave. and Unity st., requiring 6,706 cu. yd. excavation, 12,125 sq. yd. paving, and 7,640 lin. ft. concrete curb and gutter, and contract has been awarded of Rinehart Bros., of East Liverpool, O., for \$18,280.

Oil City, Pa.—Paving jobs one-half mile in length have been provided by Councils; new work will cost approximately \$25,000. Mayor Carnahan and City Controller Nulalley will arrange contracts with the following: J. M. Lesher and I. N. Hinedrites for the grading, curbing and paving of Petroleum st., between 1st and 3d, with concrete foundation, stone curbing and tar filler, Porter national block to be used; also grading Allegheny ave., from East 4th st. to city line south; Vetter Construction Co. of Meadville, for paving Bissell ave., from Secley ave. to Plumer st., Mack block, gravel foundation, tar filler and cement curb and gutter; also for paving of Washington ave., from Harriott ave. to Plumer st., Mack block, gravel foundation, tar filler, cement curb and gutter; and for paving Oak alley, from Harriott ave. to 1st alley, north of Harriott ave., with Concrete brick, concrete foundation, tar filler and cement curb and sidewalk.

Philadelphia, Pa.—Edwin H. Vare has been awarded a contract for paving Market st. with Belgian block from Delaware ave. to 2d st. and creosoted wood block from 2d st. to 16th, the limit to which the work can be carried with the amount of money now available.

Pittsburg, Pa.—Mayor has awarded contracts for raising 9th and Sandusky sts. above flood level; 9th st. will be raised 8 ft. at the lowest point, and Sandusky 9 ft.; 9th st. regrading and paving will cost \$12,852, and the Sandusky st. work \$36,266; cross streets will be regraded to conform with the elevations.

Williamsport, Pa.—Both Select and Common Councils have passed finally the ordinance awarding the contract for resurfacing the asphalt streets, to the Filbert Construction Co., and the ordinance now goes up to the Mayor for his signature; to expedite matters the company presented its bond, not yet executed, and the sureties were approved, subject to the approval of the City Solicitor.

York, Pa.—Bids from 11 firms for the paving of 2.29 miles of city highways with vitrified brick, sheet asphalt or compressed concrete, were received by Chairman Joseph Rose of the Highway Committee of City Council; the improvements proposed

will cost at least \$100,000. There is a total of 51,580 sq. yds. of paving and the bids submitted vary from \$1.60 to \$2.25 per sq. yd., the former for granitoid paving and the latter for brick paving. The asphalt bidders numbered but two and there were three different bids for laying Mack blocks for \$2.15 per sq. yd., Hartley & Ziegler Co., city, sent a bid for the paving of Penn st. from Market st. to a point near Philadelphia st., for \$2.15 per sq. yd. John H. and Peter S. Garrety ask \$2.90 per sq. yd. for the paving of all the streets with Pennsylvania clay or Bessemer brick.

Rudolph S. Blome Co., Chicago, submitted a bid for the paving of all the streets with granitoid for \$1.98 per sq. yd. John H. Dobbins, city, wants \$1.60 for the same kind of paving, or \$2.15 for the laying of Mack blocks. The only bid for compressed concrete paving was submitted by the Hassam Paving Co., Lewistown. It calls for \$1.75 a sq. yd. The General Supply and Construction Co., city, wants \$1.87 for paving Linden ave. and West Market st. with sheet asphalt and \$2.17 per sq. yd. for Mack blocks on all the streets.

Plonk & Kroll submitted the lowest bid for the use of Mack paving blocks on East Market st. It is \$2.12 per sq. yd. The firm did not bid on any of the other streets.

J. U. Fritchey & Son, Lancaster, bid \$2.15 for Mack and \$2.05 per sq. yd. for Gettysburg blocks on all of the streets. The Filbert Paving and Construction Co., of Philadelphia, asks, with two exceptions, \$1.72 per sq. yd. for sheet asphalt paving, using the California and Bermuda lake variety. The North Beaver st. bid is \$1.74 per sq. yd. and that of West Market st. 1c. less per sq. yd. The Barber Asphalt Co., of Harrisburg, submitted the following bid for the paving of the streets with Trinidad lake asphalt: West Princess, \$1.83 per sq. yd.; West Market, \$1.82; North Beaver, \$1.85; Linden, \$1.78; Hartley, \$1.86; Poplar, \$1.81; Penn, \$1.82; East Market, \$1.87.

W. W. Kelly, of Pittsburg, wants \$2.25 per sq. yd. for paving with Pennsylvania clay brick.

The amount of paving to be done on the various streets is as follows: Beaver st. from Philadelphia st. to Jefferson ave., 7,636.8 sq. yds.; Hartley st. from Market st. northwardly to city limits, 9,950.9 sq. yds.; Penn st. from Market to Philadelphia st., 1,843.3 sq. yds.; Linden ave. from Richmond ave. to West York ave., 15,901.9 sq. yds.; West Princess st. from Richmond ave. eastwardly to city limits, 968.9 sq. yds.; West Poplar st. from Belvidere ave. to Hawthorne st., 1,437.3 sq. yds.; West Market st. from Belvidere ave. westwardly to city limits, 9,368.5 sq. yds.; East Market st., from Pine st. to tracks of Maryland & Pennsylvania Railroad Co., 4,473 sq. yds.

Knoxville, Tenn.—S. P. Condon has the contract to pave Armstrong ave. with tar macadam paving; this will be the first of this kind of paving used in Knoxville.

Nashville, Tenn.—Two bids were awarded, July 21, by the Board of Public Works, one for the sewer in Murrell st., and the other for the crossing plates for West End and 28th aves.

The bids for the Murrell st. sewer were as follows: Curtis & LeSuer, \$493.80; John Broderick, \$489; T. V. Barnsfield, \$460; Quinn & Ellis, \$532.80. The bid was awarded to T. V. Barnsfield. The sewer will be constructed from the present west end of the brick sewer, west to and across University st.

The bid for the crossing plates was awarded to Stewart-Brucker Co., which made an offer to do the work for \$1.40 per 100 lbs. One other bid was submitted, that of the Cumberland Foundry & Manufacturing Co., at \$1.48 per 100 lbs.

Nashville, Tenn.—Contracts for the construction of a number of sidewalks on four streets have been awarded by Board of Public Works, following the submission of bids by 13 contractors. Following were the contracts awarded:

Both sides of 15th ave. between South and Tremont sts., the Uncle Hiram Roofing Co., \$1.49 per sq. yd.; north side of Ewing ave. between Arthur and 11th aves., the Nashville Roofing and Paving Co., \$1.46½ per sq. yd.; both sides of Grand ave. to J. T. Southgate, \$1.46½ per sq. yd.; both sides of 11th ave. between Division and Sigler sts., to the Southern Roofing and Paving Co., \$1.49 per sq. yd.

In bidding on sidewalks and curbing on Monroe st., both of which bids were included in the same proposal, Mimms-Snead Co. submitted the lowest bid on curbing, 47c. per lin. ft., and the Southern Roofing and Paving Co. bid lowest on sidewalks, at \$1.49 per sq. yd. Action was deferred in the letting of the contract.

Following were the sidewalk bids submitted:

Grand ave.: Taylor Bros., \$1.51 per sq. yd.; Southern Roofing and Paving Co., \$1.49; Hoover & Co., \$1.52; P. S. Reed & Co., \$1.57; Sam Rogers & Son, \$1.53; J. T.

Southgate, \$1.46½; Union Stone and Concrete Co., \$1.57½; Nashville Roofing and Paving Co., \$1.47½; J. W. Quinn, \$1.48; Curtis & LeSueur, \$1.52; Uncle Hiram Roofing Co., \$1.49; Mimms-Snead Co., \$1.48, and Capital City Concrete Co., \$1.50.

Eleventh ave.: Taylor Bros., \$1.61; Southern Roofing and Paving Co., \$1.49; Hoover & Co., \$1.52; R. L. Cash, \$1.62; P. S. Reed & Co., \$1.57; Sam Rogers & Son, \$1.53; J. T. Southgate, \$1.55; Union Stone and Concrete Co., \$1.57½; Curtis & LeSueur, \$1.53; Uncle Hiram Roofing Co., \$1.62; Mimms-Snead Co., \$1.63, and Capital City Concrete Co., \$1.53.

Fifteenth ave.: Taylor Bros., \$1.51; Southern Construction Co., \$1.49½; Hoover & Co., \$1.52; R. L. Cash, \$1.62; Sam Rogers & Son, \$1.53; Union Stone and Concrete Co., \$1.57½; Nashville Roofing and Paving Co., \$1.71; Capital City Roofing Co., \$1.53; Uncle Hiram Roofing Co., \$1.49; Curtis & LeSueur, \$1.53; Mimms-Snead Co., \$1.53; J. W. Quinn, \$1.50; J. T. Southgate, \$1.71; P. S. Reed & Co., \$1.57.

Ewing ave.: Taylor Bros., \$1.55; Hoover & Co., \$1.52; R. L. Cash, \$1.62; Sam Rogers & Son, \$1.53; Union Stone and Concrete Co., \$1.57½; Nashville Roofing Co., \$1.46½; Uncle Hiram Roofing Co., \$1.49; Capital City Concrete Co., \$1.50; Curtis & LeSueur, \$1.52½; Mimms-Snead Co., \$1.52; J. T. Southgate, \$1.55; P. S. Reed & Co., \$1.57.

Monroe st.: Taylor Bros., curbing, 50c. and sidewalk, \$1.51; Southern Roofing and Paving Co., 50c. and \$1.49; Hoover & Co., 49c. and \$1.52; Sam Rogers, 47½c. and \$1.53; J. T. Southgate, 55c. and \$1.55; Union Stone and Concrete Co., 50c. and \$1.57½; Nashville Roofing and Paving Co., 60c. and \$1.49½; J. W. Quinn, 50c. and \$1.50; Curtis & LeSueur, 50c. and \$1.52½; R. L. Cash, 65c. and \$1.62; P. S. Reed & Co., 50c. and \$1.57.

Fort Worth, Tex.—Bitulithic street paving costs more now than it did earlier in the summer, as bids opened by the City Commissioners July 27 quoted that material as worth \$2.10 per sq. yd. on a concrete base and \$2.12 per yd. where crushed rock was used as the foundation. In addition the company stated that it didn't care to make even that price on work where payments were to be deferred as much as five years, and it accordingly declined to bid on the North Main st. proposition. The General Supply and Construction Co. was awarded contracts for paving North Main st., Elizabeth st. from Main to Boaz, Boaz st. from Henrietta to Front, 15th st. from Jennings ave. to Throckmorton st. and 13th st. from Lamar to Rusk. The price quoted by them was \$2.06 per yd. for vitrified brick, and as the other company failed to bid on that material the offer of the Supply and Construction Co. was accepted. The Bitulithic Company was given the contract for the paving of West 2d st. from Main st. to where it joins with 5th st., upon which the other company submitted no bid. In explaining the cause of the increase in his bid, Manager Lanham, of the Bitulithic Co., said to the Commission that the old price of \$2.08½ was made during the panic at a time when labor and material were much cheaper than at present, and that the increase was compulsory upon the company.

Ogden, Utah.—After considerable debate, Council, July 19, awarded the contract for 6 blocks of paving to P. J. Moran, of Salt Lake City. The bids received were as follows: P. J. Moran, \$107,096; J. P. O'Neill Co., \$109,650; Wheelwright Construction Co., \$125,449.97, and Moran & Co., \$120,960.91. The last three bidders were Ogden firms. The district will be known as paving district No. 100.

The details of the successful bid of P. J. Moran, according to data of A. F. Parker, City Engineer, follow: Washington ave., grading, 4,391 cu. yds.; asphalt paving, 9,787.3 sq. yds.; \$27,470. 24th st., two blocks paving, 1,333 lin. ft.; grading, 1,912 cu. yds.; asphalt paving, 7,168.7 sq. yds.; stone block paving, 399 sq. yds.; \$19,209. Lincoln ave., one block paving, 664.39 lin. ft.; grading, 802 cu. yds.; asphalt paving, 3,912.5 sq. yds.; \$10,118. Wall ave., one block paving, 668.03 lin. ft., plus paving on west side, 99 lin. ft.; grading, 3,101 cu. yds.; concrete gutter, 767.03 lin. ft.; concrete curb and gutter, 416.92 lin. ft.; asphalt paving, 4,996.6 sq. yds.; \$15,624. Wall ave., one block paving, 663.4 lin. ft., plus paving on west side, 99 lin. ft.; grading, 1,477 cu. yds.; asphalt paving, 4,301 sq. yds.; \$11,650. Totals, \$84,071. Time, 150 days.

Street intersections: Grading, 3,000 cu. yds., 70 c., \$2,100; asphalt paving, including concrete base, 7,000 sq. yds., \$2.40, \$16,800; cast iron for water ways and gutters, etc., 60,000 lbs., 4c., \$2,400; concrete for curb, gutters, etc., 150 cu. yds., \$11.50, \$1,725. Totals, \$23,025. Grand total, \$107,096.

Farmville, Va.—Contract for constructing about 3½ miles macadam roads in Prince Edward County has been awarded to W. A. Slocombe, of Farmville, by State Highway Board.

Seattle, Wash.—Lewis & Wiley submitted the lowest bid to the Board of Public Works July 23 that has ever been tendered for a regrade project, for the improvement of Dearborn st. Excavation in the Denny Hill district cost 27c.; that in the Jackson st. district 25c., and the bid for Dearborn st. is 20c. per yd. There were six bidders, Lewis & Wiley's tender amounting to \$357,308; this includes a steel bridge on 12th ave. over Dearborn st., requiring the use of 550 tons of steel. The successful bidders made a price of \$95 per ton for this, while the next lowest, that of Cummings & Jones, was \$110. The estimate for the Dearborn st. improvement, including the bridge, was \$431,000. This is the third largest regrade improvement yet attempted by Seattle, Denny Hill coming first and Jackson st. second.

Spokane, Wash.—The Board of Public Works awarded contracts for grading, curbing, parking and constructing sidewalks on portions of Crestline st. and Montgomery ave. to C. M. Payne, at \$11,715, and 12th ave. to Foster & Hindle, for \$7,050.

Tacoma, Wash.—The Commissioner of Public Works has awarded the contract for paving the alley between North Tacoma ave. and G st., and N. 1st and 6th sts., to D. A. Williams & Co., for \$9,323.

Tacoma, Wash.—Despite the fact that Commissioner of Public Works H. J. McGregor has refused to accept 4 miles of pavement recently laid by the Barber Asphalt Co. in the North End, the company has been awarded a contract to pave North 26th st., from Union ave. to the west line of Stout's addition, for \$36,666. The company submitted the lowest bid and there was nothing to do but award the contract to the lowest bidder, it was explained. There were three other bids for this work. Warter Bros. proposed to complete the job for \$39,025. D. A. Williams & Co. bid \$37,958, and M. J. Hickey offered to pave the street for \$37,369. The estimate for the cost of this improvement was \$43,654.

The Wells Construction Co. was the successful bidder for the improvement work in district No. 708, which includes grading South 29th st., from Sheridan ave. to Sprague st. The Wells bid was \$7,871.25. W. H. Hickey bid \$7,973. The estimate was \$7,997.

Ten bids were received for building sidewalks on South G st., between 38th and 40th sts., and on other streets in district No. 703. Albert Anderson was awarded the job. His bid was \$3,500. Other bids received were: Fred. A. Johnson, \$4,195; Charles G. Schaefer, \$3,645; Erickson & Ozusert, \$3,667; Concrete Construction Co., \$3,940; Coast Contracting Co., \$3,714; Tiguanette & Payne, \$3,999; Wells Construction Co., \$3,945; M. J. Hickey, \$4,321.

Hinton, W. Va.—C. W. McNulty, of Huntington, has secured contract for 22,000 sq. yd. brick paving, at \$1.83 per sq. yd. for Portsmouth granite block, and 55c. per lin. ft. for concrete curb and gutter; total cost, \$60,000.—A. D. Daly, City Attorney.

Kenova, W. Va.—The Ironton Construction Co., Ironton, O., has low bid on two miles of street paving at \$50,000.

Ashland, Wis.—J. F. Hill, Chicago, Ill., submitted low bid for paving with asphalt portion of 7th ave., at \$32,471; L. S. Gasson submitted a bid for the White Construction Co., of Milwaukee, at \$34,562.

Milwaukee, Wis.—Although the Milwaukee syndicate has not yet purchased the \$75,000 street improvement bonds, the Board of Public Works has awarded contracts for \$35,096.90 worth of asphalt paving to be done in 4th Ward, to the Badger Construction Co.

Superior, Wis.—The Board of Public Works has awarded contract to grade and macadamize East 2d st., to Edw. Hawarden, at \$7,506.

SEWERAGE

Birmingham, Ala.—Council has ordered that sewers be constructed in Forrest ave. and Chestnut st.—H. E. Shropshire, Jr., City Clerk.

Ft. Smith, Ark.—Plans are being prepared by Engineer Geo. M. Myers, Kelly Trust Bldg., for 1,250 ft. of 12-in. monolithic concrete sewer.—D. B. Sparks, City Clerk.

Augusta, Ga.—An ordinance will be presented to Council calling for a number of sewers to be laid during the rest of the year; sewers that will be ordered in are as follows: On Hicks st. from Gardners ave. to 15th; on McDonald st. from Bohler ave. to city boundary; Adams st., from 9th to 3d level of canal; Polk st. from Hicks to Canal; Dugas st. from Mulberry to Roberts, and from Carrie to Kollock; on Kollock from Gwinette to Turtnett Spring road; on Miller from Cumming to Harrison, and on Myer from Phillip to Young.

Joliet, Ill.—City is considering construction of sewers in portions of Ottawa and Catalpa sts.; estimated cost \$1,218.78 and

\$45.35, respectively.—Wm. S. Welch, Clerk Board of Local Improvements.

Ft. Wayne, Ind.—Council has adopted a resolution for the construction of a combined storm water, main and local sanitary sewer.—Fremont McLees, City Clerk.

Oxford, Ind.—Town Council is advertising for bids on the sewer system to be built this fall; sewer and its laterals will drain every block in town; this is preparatory to paying the business part of town.

Des Moines, Ia.—Council will soon let contract for the Woodland ave. sewer; estimated cost \$20,000.

Fairfield, Ia.—Council is considering the construction of a sewerage system.—J. F. Clark, Mayor.

Iowa City, Ia.—City will receive new bids for sewer construction; also will construct an additional 259 ft. of 6-in. sewer on Linn st.

Storm Lake, Ia.—City Council has decided to construct a system of sanitary sewers and a septic tank.

Peabody, Kan.—Council has unanimously voted to proceed with the construction of a sewer system covering most of the city; plans have already been drawn and \$25,000 of improvement bonds will be issued.

Louisville, Ky.—The Louisville Sewerage Commission has sold \$250,000 bonds to Rhoades & Co., of New York.

Baltimore, Md.—A new method of disposing of sewage will be demonstrated shortly in the vicinity of Park Heights and Belvedere aves. by some out-of-town capitalists, who are interested in the method, according to Secretary J. R. Read, of the Water Board; Mr. Read is also manager of the Park Heights Water Co., and he says that if the plans of the capitalists do not materialize he will himself build a sewerage and stormwater system and a disposal plant.

Taunton, Mass.—The Sewer Commissioners are considering the construction of sewers on Pine, Kelton and Shores sts.

Benton Harbor, Mich.—Council has passed resolutions to construct a sewer on East Main st. from 4th to 1st st., and a sewer on Oden st. from East Main st. to south alley of blocks 12 and 13.

Trenton, Mich.—Plans have been submitted by Engineer Mason L. Brown, 821 Chamber of Commerce Bldg., Detroit, for a sewerage system; cost \$40,000.

Canby, Minn.—City will have new plans and specifications for the proposed sewer system prepared; time for opening bids has been postponed indefinitely.—M. S. Nelson, Mayor.

St. Paul, Minn.—Board of Aldermen has approved ordinance providing for the extension of the St. Anthony sewer system from Tainter st. to the Agricultural College; cost \$30,000.

Batesville, Miss.—Xavier A. Kramer, Magnolia, has secured contract to prepare plans and supervise the construction of a system of sewerage and water works.

Cartersville, Mo.—City is considering construction of four 8-in. vitrified pipe district sewers.—H. E. Moody, City Clerk.

Carthage, Mo.—Plans are being prepared by City Engineer F. B. Newton for brick and vitrified tile or concrete sewers on the southwest and east side of Carthage; cost \$30,000.—I. F. Shannon, City Clerk.

Joplin, Mo.—Surveys are being made by City Engineer J. E. Hodgdon for a septic tank sewer system.

Webb City, Mo.—Plans have been prepared by City Engineer A. J. McKenzie for a vitrified pipe, brick or concrete sewer on 4th st.; cost \$12,000.

Atlantic City, N. J.—City has sold \$93,000 drainage bonds to the Provident Bank and Trust Co. of Cincinnati.

Jersey City, N. J.—Two engineers employed by the National and New York State governments to examine the plans for the proposed Passaic Valley trunk sewer have submitted reports tending to support the contention of the New York Merchants' Pollution Committee that the sewer would increase greatly the amount of filth in the waters of New York Bay; engineers are Prof. O. H. Landreth, of Union College, and Louis L. Tribus, Commissioner of Public Works for the Borough of Richmond; sewer as proposed by the Passaic Valley Trunk Sewerage Commission is to carry the sewage of the Passaic Valley down to the meadows outside of Newark; there the sewage is to be screened and the liquid is to be pumped through a large sewer that is to be built under Newark Bay and Greenville and empty into New York Bay near Robbins Reef; plan is to take the solid matter in boats from the screening plant at the Newark meadows to the ocean and there deposit the objectionable refuse far beyond the New York and New Jersey shores; it is asserted that the screened sewage that would be emptied at Robbins Reef would be quite harmless.

Tucumcari, N. M.—Engineer W. P. Bullock, Kansas City, Mo., is making preliminary surveys for the construction of the new sewer system.

Binghamton, N. Y.—Bids will be received by the Board of Contract and Supply August 4 for the construction of a sewer on Hayden st. and a storm water sewer on Main st. from Arthur to Chestnut st.

Brooklyn, N. Y.—Bids will be received August 4 for constructing a sewer outlet in 22d ave., requiring 751 lin. ft. 16-in. flexible joint cast-iron pipe.—Bird S. Coler, Borough President.

Rochester, N. Y.—Plans for the disposal of the city sewage are being considered by the Finance and Public Improvement Committees of the Common Council; one of the plans suggested for doing away with the discharge of the sewage into the river is recommended by Consulting Engineer Emil Kuichling, and calls for a direct pipe line from the city into the lake; this, however, was only one of the plans included in Mr. Kuichling's report. George C. Mills, an engineer connected with the State Engineering Department, favored a water storage plan, which would provide enough water so that the turning of the sewage into the river would not be objectionable; the Committees decided to have City Engineer Fisher communicate with the State Water Commission and find out how long it would take to complete the water storage plan which has been under consideration by State, county and city officials at Portage; ordinance which brought the matter up was one for \$25,000 for investigation and work preliminary to beginning the construction of a sewage disposal system.

Syracuse, N. Y.—The Syracuse Intersecting Sewer Board has formally abandoned the Onondaga Creek improvement contract, National Surety Co., which furnished the \$50,000 bond for the Read-Coddington Co., was notified and also the Read-Coddington Co. of Niagara Falls; Board will readvertise that section of the job which is uncompleted.

Reidsville, N. C.—Citizens are considering election on bonds for sewer construction.

Sanford, N. C.—City is considering bond issue for construction of sewer system.

Dickenson, N. D.—City Engineer Veigel has submitted plans for construction of sewer extension; estimated cost \$5,360.

Archbold, O.—Plans have been prepared by Engineer George Champe, Toledo, for a sewer and disposal plant; system will require 1½ miles of 10 to 48-in. sewer pipe, cement, manholes, lampholes, catchbasins; cost \$40,000.—O. E. Laubert, City Clerk.

Ashtabula, O.—Council has voted to issue \$12,500 bonds for construction of sewers.—F. W. Wagner, City Clerk.

Barberton, O.—It has been found by the Sewer Committee that the sanitary sewer of the village of Kenmore empties first into a creek which after half a mile unites with the Barberton water works; Clerk has been instructed to notify the village of Kenmore at once to change the present condition.

Canton, O.—Council has passed an ordinance for the construction of a sanitary sewer in Klorer ave. from Mahoning st. to Belden ave. and in Belden ave. from Klorer ave. to the Pennsylvania railroad.—C. C. Loyd, Clerk.

Carthage, O.—Village Engineer Cowen has submitted an estimate of the cost of a sewerage system and reduction plant; total cost will be \$84,000; this does not include the cost of the ground on which the reduction plant would have to be erected; Engineer estimates that the sewerage system itself will cost \$33,723.99.

Cincinnati, O.—City Engineer Sundmaker has submitted an estimate for sewerage system for Westwood which will cost, exclusive of filtration plant, \$488,617.

Mansfield, O.—Council is considering construction of sanitary sewers in East 3d st. and Woodland ave.; plans are being prepared for a trunk sewer through Newman's and John's addition.

Massillon, O.—Board of Public Service has rejected bids for sanitary sewers in three streets; new bids will be received.

Wooster, O.—Sewer bonds amounting to \$4,500 have been purchased by the Citizens' National Bank of Wooster, which bid \$12.50 premium; Seasongood & Mayer, Cincinnati, offered par.

Youngstown, O.—The Board of Public Service has been authorized to investigate and report on question of sewage disposal.—M. F. Hyland, Clerk of Council.

Wilberton, Okla.—Citizens have voted \$25,000 bonds for construction of sewer system.

Danville, Pa.—The contract for preparing and furnishing plans for a system of sewerage and a sewage disposal plant as required by the State Department of Health has been awarded to Charles E. Collins, civil and hydraulic engineer, of Philadelphia.

Philadelphia, Pa.—Plan to erect sewage disposal plants for the Municipal Hospital, at 2d and Luzerne sts., and for the new almshouse and insane department at Byberry, is being discussed by Director Stearns, Director Neff and Chief Webster, of the Bureau of Surveys.

Reading, Pa.—Select Council has defeated the proposed loan of \$400,000 which was to be used for storm sewers and street paving.

Parker, S. D.—City is considering construction of a new sewer system.

Nashville, Tenn.—Board of Public Works will introduce appropriation bills amounting to \$22,000 for sewers in various parts of city.—W. W. Southgate, City Engineer.

Trenton, Tenn.—Citizens will vote on \$20,000 bonds for sewerage improvements.

Beaumont, Tex.—Citizens will vote about August 31 on \$75,000 bonds for extension of sewer system.

Corsicana, Tex.—Corsicana will soon have an election to decide whether or not a special tax of 20c. on the \$100 valuation shall be levied for the purpose of extending the city's sewer system.

Dallas, Tex.—The City Secretary has been instructed to advertise for bids for the laying of a sanitary sewer on block 770-A, in an alley between Swiss and Sycamore and westward to Annex; it is to be 375 ft. long, make four connections at the start, and is to cost not to exceed \$135.25 by the Engineer's estimate; Secretary is also to advertise a second time for bids for the laying of a 6-in. sanitary sewer on the right-of-way of the Katy Railroad, from Lemon ave. to Newman st., former bids having been deemed too high.

Galveston, Tex.—Commissioner Lange of Water Works and Sewerage has recommended an extension of the sewer which now terminates at 25th st. and Avenue Q. Authority was granted by the Board to advertise for bids; estimates, \$1,536.64.—A. T. Dickey, City Engineer.

Houston, Tex.—The route of the big drain sewer for the Fourth Ward, which was originally planned to run down Genesee st. from Sherman st., will be changed to run down Brazos to within a couple of blocks west of Heiner st., then to San Felipe st. and then into the bayou.

Ocean Beach, Va.—The Capital City Beach Corporation, Richmond, will soon ask bids on sewers, grading and granolithic sidewalks in this addition.—T. P. Bryan, President.

Spokane, Wash.—Plans have been completed for the construction of the following sewers: Alley between Montgomery and Ermina aves. and Montgomery and Illinois aves., estimated cost \$6,430; alley between Baldwin and Ermina and Illinois and Ermina, estimated cost \$6,836; Montgomery ave., estimated cost \$2,538, area 228,592 sq. ft.; Montgomery ave., estimated cost \$1,616.

Evansville, Wis.—Citizens are considering the installation of a water and sanitary sewerage system; Engineer Icke, Madison, is interested.

Racine, Wis.—Council has instructed the Board of Public Works to prepare plans, specifications and estimate of cost for rebuilding the English st. sewer outfall.—P. H. Connolly, City Engineer.

Stratford, Ont., Can.—Board of Health has approved plans for the extension and improvement of the sewage disposal plant.

BIDS RECEIVED AND CONTRACTS AWARDED

Ensley, Ala.—Council has let sewer contract to J. M. Burkhalter & Co., their bid being a little over \$31,000.

Pasadena, Cal.—J. S. McBride has been awarded a contract for laying a sewer on Oak Knoll ave. for \$9,874. Other bidders were: C. Burlaick, \$10,889; E. L. Planticco, \$13,388; W. E. Moyle, \$11,463.48; Andrew Holloway, \$11,499; A. F. Easley, \$10,754; W. N. Milagovich, \$12,700; Chamberlain & Williamson, \$12,646.78.

San Francisco, Cal.—Contract was awarded to the Healy-Tibbitts Construction Co. for construction of Section B of the Division st. sewer, at \$144,275, this being the lowest and most advantageous to the city.

Hartford, Conn.—The Board of Contract and Supply has awarded contracts for four sewers, as follows:

Kenyon st.—Peter Rossi, \$1,357.95; Bernardino & Silvestri, \$1,358.05; Hartford Paving & Construction Co., \$1,409.25; C. H. Slocumb, \$1,185.25; F. B. & W. H. O'Neil, \$1,443.12. Contract awarded to C. H. Slocumb, the lowest bidder.

Gray st.—Peter Rossi, \$472.50; Hartford Paving & Construction Co., \$592.50; Bernardino & Silvestri, \$420.50; C. H. Slocumb, \$515. Contract awarded to Bernardino & Silvestri.

Edgewood st.—Joe Tozzoli, \$1,533.50; C. H. Slocumb, \$1,265.50; F. B. & W. H. O'Neil, \$1,475.16; Peter Rossi, \$1,286.40; Bernardino & Silvestri, \$1,146.80; Hartford Paving & Construction Co., \$1,242. Contract awarded to Bernardino & Silvestri.

Whitney st.—Bernardino & Silvestri, \$2,125.25; Hartford Paving & Construction Co., \$2,774; C. H. Slocumb, \$2,305; F. B. & W. H. O'Neil, \$2,202.05; Peter Rossi, \$2,371.50. Contract awarded to Bernardino & Silvestri.

Moultrie, Ga.—Dysard & Co., of Atlanta,

have been awarded contract for constructing sewers, at \$14,808.

Cedar Rapids, Ia.—M. Ford has secured contract for constructing sewer in Grand ave., for \$13,191.

Dayton, Ky.—Contract for construction of lateral sewers will undoubtedly be awarded to the John B. McLane Co., whose bid is about \$10,000 less than the next highest bid for the work; their bid was \$1 for the 12-in. pipe, the size that will be used in three-fourths of the work; other bids averaged about \$1.40 for the same pipe.

Louisville, Ky.—Bids were received, July 23, for Section D, northwestern system of sewerage, on Grayson, from 20th to 28th sts., by the Commissioners of Sewerage, and the lowest bidder was S. G. Mortimore, of Chicago, who bid \$50,000, and the contract will probably be awarded to him; the American Engineering & Construction Co., of Chicago, and Fruin-Colnon Engineering & Constr. Co., of St. Louis, also bid.

Louisville, Ky.—The lowest bid opened July 16 by the Commissioners of Sewerage for contract 46, the 19th st. sewer, was submitted by the Fruin-Colnon Construction Co., of St. Louis, Mo., for \$12,810.

The following are the bids received, July 9, by the Commissioners of Sewerage, for constructing Section B of the South Louisville branch sewer, Contract 45, (a) C. T. McCracken & Co., Columbus, O.; (b) T. B. Jones & Co., St. Louis, Mo.; (c) Fruin-Colnon Constr. Co., St. Louis, Mo.; (d) American Engineering & Construction Co., Chicago, Ill.; (e) Charles F. Fitch & Co., Louisville; (f) Blackstaff Engineering Co., Philadelphia, Pa.; (g) T. J. O'Connell, Louisville; (h) Hy. Bickel Co., Louisville; 3,530 lin. ft. earth excavation, (a) \$10, (b) \$14,659, (c) \$16.50, (d) \$17, (e) \$17, (f) \$18.20, (g) \$19, (h) \$21, 3,070 cu. yd. concrete, (a) \$9.70, (b) \$7.03, (c) \$7.25, (d) \$7.35, (e) \$7.36, (f) \$7, (g) \$8, (h) \$8, 355,000 lb. plain steel bars, (a) 3½c., (b) 0.0332c., (c) 3c., (d) 2½c., (e) 0.0308c., (f) 3.2c., (g) 3c., (h) 3c., 350,000 lb. deformed steel bars, (a) 3½c., (b) 0.0336c., (c) 3c., (d) 2½c., (e) 0.0311c., (f) 3½c., (g) 3½c., (h) 3.2c., 350,000 lb. deformed steel bars, (a) 3½c., (b) 0.0336c., (c) .03c., (d) 0.0311c., (h) .032c., 20 cu. yd. excavation below masonry, (a) \$2, (b) \$1.75, (c) \$2, (d) \$2, (e) \$1.25, (f) \$2.50, (g) \$2, (h) \$3, 20 cu. yd. gravel refill, (a) \$2, (b) \$1.50, (c) \$2, (d) \$2, (e) \$1.50, (f) \$3, (g) \$2, (h) \$3, Vitrified pipe (list price \$204), (a) 50 per cent. off, \$102; (b) 60 per cent. off, \$81.60; (c) 60 per cent. off, \$81.60; (d) 60 per cent. off, \$81.60; (e) 75 per cent. off, \$51; (f) 50 per cent. off, \$102; (g) 50 per cent. off, \$102; (h) 50 per cent. off, \$102, 1,000 lin. ft. 8-in. underdrain, (a) 40c., (b) 40c., (c) 40c., (d) 40c., (e) 40c., (f) 40c., (g) 40c., (h) 40c., Cleaning up (lump sum), (a) \$100, (b) \$1,765, (c) \$500, (d) \$700, (e) \$1,000, (f) \$1,200, (g) \$100, (h) \$2,500, Totals, (a) \$78,011, (b) \$87,399, (c) \$92,064, (d) \$93,461, (e) \$94,996, (f) \$98,908, (g) \$102,962, (h) \$113,012.—J. B. F. Breed, Chief Engineer.

Boston, Mass.—The G. M. Byrne Co. submitted the lowest of 13 bids received by Superintendent Emerson for construction of sewer works in Talbot ave., Westcott, West Park and Standish sts., Dorchester, at \$18,319.26. Bidders were: Bruno & Pettitt, \$19,288.09; William J. Barry, \$19,703.09; Coughlan & Sheils, \$20,065.46; D. F. O'Connell Co., \$20,255.48; D. E. Lynch, \$21,004.47; McCarthy & Walsh, \$21,621.15; John J. Falvey, \$22,623.80; Byrne Contracting Co., \$24,524.72; J. H. Ferguson, \$24,878.90; James D. Kelley, \$25,144.25; T. J. Young Co., \$26,622.15, and W. H. Ellis, \$29,985.30. The bids were taken under advisement.

Virginia, Minn.—Bids for laying a sewer main between Beech and Hickory sts. were received as follows: G. C. Butler, \$2,749.43; Pastoret & Lawrence, \$2,787.20; H. L. Bartlett Co., \$3,223.52. C. C. Butler was awarded contract. A. E. Bickford, City Clerk.

St. Joseph, Mo.—Contracts have been awarded as follows: Extension of Blacksnake sewer, plain concrete, to Broadway, J. H. Hartman, at \$37,383.44; construction of upper Whitehead sewer, plain concrete, in South Park, J. H. Hartman, at \$16,702.93; extension of north fork of Mitchell ave. sewer through Brookdale, reinforced concrete, Rackliffe & Gibson, at \$11,649; construction of Lake ave. sewer, G. O. Skilbred, at \$2,707; construction of 11th st. sewer, G. O. Skilbred, at \$4,101. Marnell's bid on the Wyatt Park sewer was \$1,661.81.

Akron, O.—The lowest bids received on three sewer jobs July 27 were as follows: Market and North st. sewer, from Valley to Balch sts., Andy Singer, \$1,513.50; Palmer st. sewer, from Washington st. to Grant st., J. McGowan, \$308.40; River st. trunk sewer, J. McGowan, \$8,595.95.

Dayton, O.—Two bids were received by the Service Board for the construction of a sanitary sewer in Parnell ave., from Huffman ave. to the lines of lots Nos. 16,125 and 16,126, and Shafer & Dill were low, proposing to make the improvement for \$759.95. W. H. Boyd, the other bidder, had his figures just \$29 higher.

WATER SUPPLY

Fremont, O.—Board of Service opened bids for the construction of two new sewer systems in Fremont, the Morrison and 5th st. sewer, which will cover nearly the entire east side of the river, and the Front st. storm relief; Kinney & Zeigler, local contractors, secured the work on low bids; their bid on the Morrison st. sewer was \$16,572.33, and on Front st. \$4,288.96.

Mansfield, O.—The Directors of Public Service opened four bids for construction of new sanitary sewer on North Mulberry st., between Spring Mill and Harker st., and contract was awarded to George C. Long, at 38½c. per ft.; the bids ranged from that figure on up to 58c. per ft.

Massillon, O.—The Board of Public Service has opened bids for contract to build sanitary sewers in State, Cypress and 2d sts.; three bids were received for the work from Frank Craft, John Schott and Valentine Neidlinger. After considering the bids it was decided to reject all of them and advertise for new bids to be in before August 10; sewerage to be done consists of about 4,000 ft. in State st., 400 ft. in Cypress st., and nearly 1,200 ft. in 2d st.—H. M. Leahy, President.

Struthers, O.—Council has decided to use concrete in the construction of the main sewer, and contract for the work awarded to James Joyce, his bid being the lowest for concrete work; \$5,000 worth of bonds will be issued for sewer construction.

Glassport, Pa.—The Thomas Sweeney Co. has received contract, at \$3,132 for constructing a pipe sewer in Indiana ave. and 9th st.

Hazleton, Pa.—Residents of West Hazleton have protested against action of Council in awarding contract for construction of Green Ridge sewer system to George H. Meinholz, of Reading, whose bid was about \$19,000, or \$3,000 higher than that of Thos. A. Williams, of West Hazleton. Williams did not submit a \$3,000 bond in compliance with specifications, and Meinholz specified a shorter period for completing the work.

Stowe, Pa.—Willauer & Co., of Pottstown, have been awarded the contract to build a sewage disposal system at the Stanley G. Flagg & Co. works.

Knoxville, Tenn.—The construction for the sewer on Bedford ave. has been let to McGuire & Co. for \$1,600.

Nashville, Tenn.—The contract for construction of a 12 and 10-in. clay pipe sewer between Woodland and Main sts., in East Nashville, was let by the Board of Public Works to Curtis & LeSueur for the sum of \$1,575; there was only one other bid submitted, that of Quinn & Ellis, of \$1,783.27.

Nashville, Tenn.—The Board of Public Works, July 22, awarded contract for the construction of a sewer in Murrell st., to T. V. Barnesfield, his bid being \$460.20; following were the bids submitted: Curtis & LeSueur, \$493.80; T. V. Barnesfield, \$460.20; John Broderick, \$489; Quinn & Ellis, \$532.80.

Dallas, Tex.—Compilation of the bids on the Fair Park sewer work was completed by City Engineer Preston. It shows: W. E. Underwood, \$31,765.46; Truehart & Jackson, \$42,834.90; D. C. McCord, \$42,538.50. In addition to these bids covering the general work, Underwood bids 20c. a lin. ft. and in depth for rock trench, and 20c. a ft. for lamp holes. Truehart bid 40c. for the trench work, and 30c. for the lamp holes. McCord bids 35c. for the rock trench, and 50c. for the lamp holes.

Dallas, Tex.—For the construction of over 6,000 ft. of 8 to 12 in. sanitary sewer, contract was awarded, July 23, by the Board of Municipal Commissioners, to Ockander Bros., who bid \$7,750. Other bids were those of George S. Vivian, \$15,232.40; Dallas Home Improvement Co., \$9,656.30; McCord Construction Co., \$9,541.85, and C. W. Oleott, \$8,508.14. It is expected that the work can be accomplished in about two months.

Logan, Utah.—Davis & Heuser have secured the sewer contract, which amounts to about \$55,000.

The bids received by City Engineer A. F. Parker were for lump sum bids, no unit prices, and were as follows: Davis & Heuser, Salt Lake City, Utah, \$59,695; P. J. Moran, Salt Lake City, Utah, \$59,979; J. P. O'Neill Construction Co., Ogden, Utah, \$60,100; Wheelwright Construction Co., Ogden, Utah, \$62,350; Moran & Co., Ogden, Utah, \$62,399.55; Tibby & Jordan, Salt Lake City, Utah, \$74,950. The above bids were made on the following quantities: 1,400 lin. ft. 18-in. pipe; 4,300 lin. ft. 12-in. pipe; 5,370 lin. ft. 10-in. pipe; 11,312 lin. ft. 8-in. pipe; 6,613 lin. ft. 6-in. pipe; 76 brick manholes complete; average depth of trench, 11 ft.

Delavan, Wis.—George W. Graham Co., Freeport, Ill., has secured contract for constructing about 1 mile of sewer for city.

Marinette, Wis.—Sewer contracts have just been awarded at a total expenditure of over \$11,000, of which the local firm of Mulholland & Son, of Kaukauna, gets \$4,873.16 for the construction of the longest individual sewer, 7,000 feet. Work will be commenced at once.

Anniston, Ala.—In accordance with the proposed intention of the Council to purchase the Anniston Water Supply Co.'s system, or else establish a new system, Mayor Wike has been authorized to employ experts to appraise the system in use and to furnish the cost of another plant with a capacity of an equally large supply of water.

Warrior, Ala.—The city officials are planning for the installation of a system of water works with filtration plant; work will probably begin on this during the present year; town has a nucleus for the system in an old system installed some time ago by one of the coal mining companies, but which has been abandoned for some time. The water will be secured from the Warrior River about two miles away.

Alameda, Cal.—With the purpose of having the insurance companies reduce their rates in this city, the Fire Commissioners have recommended to Council plans for improving the fire fighting facilities by the addition of hydrants and the laying of larger mains, also the installation of fire mains in sections that are now without mains; Commissioners recommend that the 6 and 8-in. pipes be replaced by 12-in. mains in Park st. from Clement ave. to Santa Clara ave.

San Bernardino, Cal.—The Bear Valley Mutual Water Co. has decided to at once begin the erection of a new dam, 100 ft. below the present Bear Valley dam, building it 12 ft. higher than the original dam which registers 53 ft.

Manchester, Conn.—Eighth School District has voted \$50,000 for individual water plant.

Washington, D. C.—Engineer Commissioner Judson has recommended to the Commissioners that the following water mains be laid and service sewers constructed: 770 ft. of 8-in. water main in 39th st. between McKinley and Livingston sts. northwest; 230 ft. of 12-in. water main in the Conduit road, between Elliot place and the distributing reservoir; sewer in 14th st. southeast between V and W sts.

Joliet, Ill.—Bids will be advertised for a water main on Whitley ave., William st. to Miller ave; cost \$1,725.99.—Wm. S. Welch, Clerk Board of Local Improvements.

Rankin, Ill.—The Village Trustees are considering the construction of water works.

Virginia, Ill.—City is considering construction of a water works system; cost \$10,000; water supply will be drawn from the Sangamon River; distance six miles.

Waukegan, Ill.—Council has passed an ordinance for constructing water supply pipes in Sunderlin and County sts.—H. Thacker, City Clerk.

Fort Riley, Kan.—Water works will be rebuilt; cost \$60,000.

Russell, Kan.—Citizens have voted \$65,000 bonds for water works and an electric light plant.

Covington, La.—Town Council will order the placing of 25 additional fire plugs.

Rayne, La.—Citizens have voted \$5,000 bonds for extension of water works.

Winnfield, La.—Citizens will vote September 15 on \$15,500 bonds to complete and extend water works system.

South Paris, Me.—Village will construct water works; cost about \$50,000.—Geo. R. Morton, Engineer; E. N. Haskell, Village Clerk.

Baltimore, Md.—Water Engineer A. M. Quick has recommended installation of additional pump of 25,000,000 gallons capacity in Mt. Royal pumping station to improve water supply in western district; cost \$150,000.

Easthampton, Mass.—W. H. Tannatt, Town Engineer, has submitted to Board of Water Commissioners a report and plans suggesting four different ways in which reservoir on side of Mt. Tom may be improved.

Minneapolis, Minn.—E. P. Sykes has recommended to the Water Works Committee that a water tower be erected on Lowry Hill.

Batesville, Miss.—Xavier A. Kramer, Magnolia, has secured the contract to prepare plans and specifications and supervise the construction of a system of water works and sewerage.

Meridian, Miss.—The Meridian Water Works is considering the installation of a big reservoir.

Cartersville, Mo.—Plans are being prepared by Engineer Frank Funk, Webb City, for a system of water works; cost \$50,000.—H. E. Moody, City Clerk.

Bear Creek, Mont.—Chris. Verglu has applied for a water and an electric light franchise.

Beaver City, Neb.—Citizens have voted bonds for water works extension.

Peru, Neb.—R. F. Neal is interested in

project to install a municipal water works plant.

Camden, N. J.—Proposition which if accepted by city would guarantee ample water supply for manufacturing purposes and insure potable supply in case the city's artesian system should fail, has been presented to Council; proposition comes from recently organized South Jersey Water Co.—Murtha P. Quinn, President.

Rochester, N. Y.—Comptroller Pond has been authorized to issue \$200,000 water works improvement notes.

Troy, N. Y.—City will purchase about 16 tons of sulphate of copper to remove the odor and taste caused by algae; City Engineer will prepare specifications.

Bowman, N. D.—City has accepted plans of A. H. Saver, Engineer, for a water works system; 75,000-gallon steel tank will be erected.

Cincinnati, O.—I. J. Jewell, Chicago, will submit a proposition to the Board of Public Service to filter the city water by the use of air.

Cincinnati, O.—Delhi, Home City, Fernbank, Addyson, North Bend and Cleves have decided to accept offer of city to furnish water at 10c. provided that each village lay its own pipe.

East Liverpool, O.—Council has authorized the Board of Public Service to receive bids for building a mechanical filtration plant.—S. W. Crawford, Mayor.

Elmore, O.—Council has granted a franchise to Samuel S. Wyer, of Columbus, to construct and maintain a water works system.

Mansfield, O.—Council is considering the approval of plans for a new pumping station and water main along East Arch st. to Main and providing for the issuance of \$30,000 bonds to defray the cost of same.

Mt. Healthy, O.—Citizens have voted \$33,000 water works improvement bonds.

Newark, O.—Proposals for furnishing the necessary labor or materials, or both, for the construction of an infiltration intake for the municipal water works will be received by the Board of Public Service August 4; work in general shall consist of furnishing the necessary pipe material, specials and valves and laying caissons below the bed of the North Fork of the Licking River.—Albert C. Gundlach.

Portsmouth, O.—Council has passed ordinance providing for \$300,000 bonds for the extension of the water works.—Filmore Musser, City Clerk.

Urbana, O.—Council has authorized a \$140,000 bond issue for the erection of a new city water works system.

Dewey, Okla.—Plans are being prepared by the Michel Cook Engineering Co., Keystone Bldg., Joplin, Mo., for a system of water works; cost \$50,000.

Henryetta, Okla.—City has selected Granbery Jackson, Civil Engineer, Mt. Pleasant, Tenn., to make plans and supervise construction of a system of water works; \$50,000 bonds are available.

Lone Wolf, Okla.—Plans are being prepared by the Michel Cook Engineering Co., Keystone Bldg., Joplin, Mo., for a system of water works; cost \$45,000.

Okemah, Okla.—M. A. Earl, Muskogee, is preparing plans for water works and electric light plant; cost \$50,000.

Wagoner, Okla.—Citizens will vote in August on \$200,000 water works, electric light and City Hall bonds.

Charleroi, Pa.—Town is to have a filtration plant; water company on consideration of an extension of the franchise for an additional term of 20 years has agreed to erect and maintain the system.

Claysville, Pa.—Borough Council is taking tangible steps toward securing a permanent water supply which will provide an abundance for house and lawn purposes.—Wm. McCreary, President.

Clymer, Pa.—A new water company has been organized with the following officers: President, W. E. Oakes; Secretary, Dr. W. A. Evans; Treasurer, Dr. H. Ney Prothero; charter will be applied for under the name of Citizens Water Co. and a plant will be put in to furnish the town with an ample supply of good pure water from several strong springs above the town.

Spangler, Pa.—Northern Cambria Water Co. is being formed for furnishing Barnesboro and Spangler a first-class water supply; corporation has secured valuable rights on Woods Run, two miles northwest of Spangler; bids on construction of reservoir will be asked shortly and work completed this fall; a large main will be laid to carry a supply for both Barnesboro and Spangler.—James A. McLain, Spangler, Treasurer.

Chattanooga, Tenn.—Bids will be received August 13 for \$900,000 bonds for purchasing or constructing a system of water works.—W. R. Crabtree, Mayor.

Jellico, Tenn.—Citizens have voted \$45,000 bonds for construction of water works; nine miles of piping will be laid.—S. B. Snyder, Mayor.

Lexington, Tenn.—City is considering installation of water works and electric light plant; consulting engineers representing machinery companies are invited to submit estimates; cost not to exceed \$15,000.—H. E. Graper is interested.

Nashville, Tenn.—Board of Public Works will soon award contract for laying 28,000 ft. of water main in annexed territory.—W. W. Southgate, City Engineer.

Dallas, Tex.—City Engineer J. M. Preston has announced that the plans for the proposed new reservoir at White Rock Creek will probably be completed very soon; reservoir is to cover about 1,400 acres of land and will have a capacity of more than 5,000,000 gallons. The whole scheme involves some serious engineering problems and expert skill and the preparing of plans has been rather a stupendous task.

Winnsboro, Tex.—Citizens have voted \$18,000 water works bonds.

Kaysville, Utah.—Citizens will vote on \$25,000 bonds for proposed water works system.

Swanton, Vt.—Citizens have voted \$95,000 bonds for water works system.

Puyallup, Wash.—City will immediately set about to purchase the water pipe for the streets to be paved in the business section; purchase of the necessary material has been placed wholly in the hands of Councilman F. V. Stevenson, Chairman of the Streets Committee, and Councilman Edward Jurin.

Mellen, Wis.—The Mellen Water and Light Co. will extend its mains if granted a 15-year contract.

Cobalt, Ont., Can.—Board of Health has approved plans for water works and a sewer system; sewage will be disposed of by sedimentation and secondary treatment.

London, Ont., Can.—Plans have been approved by Board of Health for an extension of the water system.

BIDS RECEIVED AND CONTRACTS AWARDED

Chico, Cal.—When the Chico Water Supply Co. presented its bid to the City Council for furnishing the municipal water supply for the ensuing year, it presented a statement that it would be unable henceforth to afford Holly pressure unless patrons shut off the water immediately during a fire. The bid, which was accepted, was as follows: Sixty-seven fire plugs, 50c. each per month, \$33.50; 16 fire cisterns, 50c. each per month, \$8; engine house on Main st., per month, \$2; City Hall, general use, per month, \$1.50; city park, per month, \$5; Junction Park, per month, \$2.50; Holly pressure for fires, per month, \$100; five drinking fountains, \$1 each per month, \$5. Water for street sprinkling wagons, daily, eight hours each; Sunday excepted, and for one or two sprinkling wagons running at night, from 9 p. m. to 4 a. m., for 7½c. per load, a load not to be over 750 gallons. The right is reserved to discontinue the use of the night sprinkling wagons whenever the company desires so to do.

Newman, Cal.—Contract for a steel tank and tower for the Newman Water Co. has been awarded to Des Moines Bridge & Iron Works, of Des Moines, Ia., for \$6,690.—Charles C. Sloan, Consulting Engineer.

Ft. Collins, Colo.—Council has awarded contract for construction of 4,000,000 gallon filter plant to the Roberts Filter Mfg. Co., of Philadelphia, Pa., for \$34,680.

Waterbury, Conn.—After the bids for the construction of the foundation of the new dam at the Branch, as tabulated by City Engineer R. A. Cairns, had been read, the Board of Public Works awarded the contract to F. J. Boas, of Philadelphia, the lowest bidder. Bids were as follows: Fred. T. Ley & Co., Springfield, \$53,655; Sperry Engineering Co., New Haven, \$49,975; O'Brien Construction Co., Waterbury, \$48,525; Field, Barker & Underwood, Philadelphia, \$46,925; F. J. Boas, Philadelphia, \$42,279. None of the Commissioners made a recommendation that the advice of Mayor Thoms and City Engineer Cairns be followed and that the work be done by the day.

Moultrie, Ga.—The Mayor and Council have let the contracts for municipal improvements amounting to a total of more than \$42,000. Dysard & Co., of Atlanta, were given the contract for laying the remainder of the sewers at \$14,808. The General Pipe and Foundry Co., of Atlanta, got the contract for furnishing the water mains at \$11,232. The contract for laying the water mains was awarded to Sullivan & Long, of Bessemer, Ala., at \$5,784. Cole & Co., of Newnan, received the contract for a steel standpipe at \$5,750.

Joliet, Ill.—The lowest bid received July 19 by the Board of Public Improvement for constructing the Pleasant st. water and sewer mains is stated to have been submitted by Robert Shannon, for \$11,683.

Newport, Ky.—The following is the list of the successful bidders for the improvement of the water works system:

Contract 1—Item 1—For one five million (5,000,000) gallon vertical triple expansion, crank and flywheel, condensing pumping engine, together with all steam and water piping, trimmings and appurtenances, the sum of \$37,077, bid of Platt Iron Works Co., of Dayton, O.

Contract 2—Item 1—For cast-iron water pipe, delivered as per plan and specification 1,117.04 tons, at \$31.90 per ton, \$35,633.58; item 2—for cast-iron hub and spigot special castings, delivered and laid as per plan and specification, 15.3 tons, at \$64.90 per ton, \$992.97; item 8—for additional excavation in pipe trenches when ordered in writing by the engineer, 100 cu. yds., at 40c., \$40; item 9—for Portland cement concrete in pipe trenches when ordered in writing by the engineer, 25 cu. yds., at \$5 per yd., \$125; total, \$36,791.55; bid of Joseph Gradison, Cincinnati, O.

Contract 2—Item 3—For 20-in. double seat bronze mounted water stop valves, delivered at the site of the work, 4 at \$110 each, \$440; 4 with by-pass, at \$135, each, \$540; item 4—for 16-in. double seat bronze mounted water stop valves, delivered at the site of work, 2 at \$62.50 each, \$125; item 5—for 12-in. double seat bronze mounted water stop valves, delivered at the site of the work, 2 at \$31.50 each, \$63; item 6—for 8-in. double seat bronze mounted water stop valves, delivered at the site of work, 3 at \$17 each, \$51; item 7—for cast-iron street stop boxes, delivered at the site of work, 17 at \$3.50 each, \$59.50; total, \$1,278.50; bid of Bourbon Copper & Brass Works, Cincinnati, O.

Contract 3—For one steel water tank tower and foundation; all bids on contract rejected, being considered too high by the Consulting Engineers, John W. Hill & Sons, Cincinnati, O.—W. H. Newell, Secretary.

Boston, Mass.—Water Commissioner Hanan has awarded to the Hersey Manufacturing Co. a contract for supplying the Water Department with 3,850 water meters for \$25,760.

Easthampton, Mass.—George W. Carr Co., of Worcester, has secured the contract for a 4-compartment settling tank and a 2-syphon dosing tank.

Pittsfield, Mass.—Roy Barker, Providence, R. I., has secured contract for sinking an artesian well on the Ashley reservoir water shed, for \$3,500.

Buhl, Minn.—Contract for laying water mains and sewer pipes has been awarded to C. C. Butler, of Virginia, for \$3,923.—M. A. Nichols, Village Recorder.

Buffalo, N. Y.—The general contract for erecting a pumping station on Porter ave., 365x400 ft., steel, stone, brick and concrete construction, has been awarded by the city to B. I. Crooker, 4 Builders' Exchange, for a cost of \$383,000.—Robert A. Wallace, architect.

Gowanda, N. Y.—The State Commission in Lunacy, at Albany, has awarded contract for reservoir for water storage, piping and connections at the Gowanda State Homeopathic Hospital, to Hurley & Lyne, Fredonia, for \$8,500, also for 3 horizontal tubular boilers for the hospital, to the Erie City Iron Works, 149 Broadway, New York City; cost, about \$6,400.

Roy, N. Y.—Golden & Lansing were successful bidders for laying water pipes from Fulton to Washington st. in Front st., and also in Orchard av.

Yonkers, N. Y.—The lowest bid received by the Board of Contract and Supply for furnishing and erecting a boiler plant at the tube well station of the water works, consisting of two 225-horsepower water tube or internally fired boilers with settings, grates, front feed and blow-off piping, gauges, etc., was that of the Erie Iron Works, Erie, Pa., for \$5,425.

Youngstown, O.—Bids for iron pipe for the Water Works Department were received by the Board of Public Service, July 24, and the United States Cast Iron Pipe Co. was low bidder at \$23.50 per ton; other bids were as follows: Dimmick Cast Iron Pipe Co., \$24.60 per ton; Lynchburg Foundry Co., \$23.85 per ton, and the Massillon Iron and Steel Co., \$24 per ton.

Artesia, Tex.—The Farmers' Electric Light and Power Co. has accepted the bid of the Buckeye Engine Co. to put in a pumping plant for the purpose of pumping water from artesian wells sunk out of the belt; also from surface wells sunk in the district named in the contract; plant is to furnish power enough to pump water to irrigate 4,400 acres of land and furnish electric lights to all residences in the district.

Temple, Tex.—The Board of Water Commissioners has declared the award of contract for the vertical triple-expansion pump to be installed at the river station to the John H. McGowan Co., of Cincinnati, the contract price being \$18,300. James E. Brady, representative of the company, personally represented its interests before the Commissioners. Four proposals from pump builders were opened by the Commissioners and referred to a special committee, consisting of Superintendent Bracken, City

Engineer Smith, Supervising Engineer Werenskiold and Commissioner Denison, and the Commissioners will report to the City Council the results of their awards of contract for the pump, and there is no doubt that the findings will receive approval.

The contract as awarded to the McGowan Co., specifies that it is to be a "turnkey job," completed and ready for operation within 120 working days from date of contract. The shipment is to be over the Sante Fe Railroad from Chicago to Midway. The specifications in the proposal by the McGowan Co. provide for a pump weighing 200,000 pounds.

The bid of the Epping-Carpenter Co., of Philadelphia, was \$16,500 for a pump weighing 140,000 pounds; Allis, Chalmers & Co., of Milwaukee, bid \$28,500 for a pump weighing 275,000 pounds. The bid of R. B. Wood & Co., of Camden, N. J., was \$18,500, no weight stipulated in their proposal.

The bid of the Epping-Carpenter Co. was, in so far as dollars and cents are considered, the lowest, but an examination of the plans and specifications submitted with their proposal evidenced the fact that the pump they proposed to build would be minus several important parts provided for in the original specifications, which would entail an additional expense of \$4,000 in round figures which, added to their bid of \$16,500, would increase it to \$20,500. Mr. Brady, representing the McGowan Co., made the proposition to the Commissioners that his builders would supply a pump, built on the specifications submitted by the Epping-Carpenter Co., for \$16,300—\$200 less than the latter's bid, but instead of accepting Mr. Brady's last proposition, the Commissioners awarded the contract to his company for the pump to be built according to the original specifications.

Milwaukee, Wis.—The Board of Public Works has awarded contract for 2,340 tons of 36-in. c.-l. water pipe to the U. S. Cast Iron Pipe & Foundry Co., New York, at \$24.40 per ton; total, \$57,340.—Charles J. Poetsch, City Engineer.

Panama, I. C.—The Isthmian Canal Commission, at Washington, D. C., has awarded to the U. S. Steel Products Co., 30 Church st., New York, N. Y., the contract for 20,000 ft. of wrought iron or steel pipe.

LIGHTING AND POWER

Citronelle, Ala.—E. E. Nichols will organize company to establish electric light plant.

Cullman, Ala.—Another 105-k.w. dynamo will be installed at the municipal electric light plant; transmission lines will be extended.—B. Kiel, Superintendent.

Los Angeles, Cal.—Council has approved a recommendation of the Board of Public Works that \$10,000 be set aside from general taxes for the next two years to pay the cost of preliminary work of establishing power plants along the line of aqueduct.

Modena, Cal.—Plans for the erection of the big power plant of the Gold Springs Mining and Power Co. have been approved; erection will begin at once.

Nevada City, Cal.—C. C. Curtis, Engineer of the Southern Pacific Co., has applied for permission to construct a power plant on the North Yuba River, in Sierra county.

Oakland, Cal.—The Council Committee on Judiciary and Ordinances has under consideration the application of the Great Western Power Co. for a franchise to erect overhead wires through East Oakland to carry the power current from the station at the head of Trestle Glen to the power house at the foot of 4th ave.

Vallejo, Cal.—The Vallejo Electric Light and Power Co. is considering the extension of its transmission lines into the Heights section of the city.—K. Casper, General Manager.

Colorado Springs, Col.—Mayor H. F. Avery is favorable to construction of an electric light plant.

De Beque, Col.—E. A. Swenson, of Colorado Springs, is interested in the construction of a water power plant on Grand River.

Palisades, Col.—The Palisades Light, Heat and Power Co. is considering the erection of 10 miles of transmission line.—H. L. Davis, Manager.

Jacksonville, Fla.—The Electric Committee has estimated the cost of the addition of 100 new arc lights to the city's circuits at about \$9,054; installation has been recommended.

Mulberry, Fla.—The Mulberry Electric Co. is considering the extension of its transmission lines to Kingsford.—R. H. Pratt, President.

Bremen, Ga.—City has selected W. J. Radcliffe, Tallapoosa, to superintend construction of electric light plant; \$8,000 bonds are available.

Elberton, Ga.—Engineer Park A. Dallis, Atlanta, has submitted report, which Council has adopted, for furnishing increased electric power; will install 300-h.p. generator at electric light plant, increase water

power by lowering tailrace, remove and install present generator at pumping station and construct new line from electric plant to city; \$5,000 bonds are available.

Ft. Maries, Ida.—Village has granted a lighting franchise to G. H. Jay, Great Falls, Mont., water power plant will be installed; cost \$35,000.

Boonville, Ind.—Council has granted a franchise to the Southern Indiana Oil and Coal Co.; price of the gas, as stipulated in the franchise, will be 25c. per 1,000 cu. ft.; work will begin within four months to lay the pipes; gas will be piped from the field at Gentryville, Ind.; company intends to supply Boonville, Rockport and perhaps will pipe it to Evansville.

Henderson, Ind.—The capacity of the City Gas Works is to be doubled immediately; contracts for new buildings will be let at once and a large amount of new machinery will be purchased.

Mishawaka, Ind.—On a motion by Councilman L. D. Partridge, and passed by Council, the City Attorney was instructed to draw up an ordinance, compelling the telephone and other companies having poles and overhead wires in the downtown district to remove same and place them under ground; ordinance also calls for slightly poles to replace those now used by the street car co.; Councilman McNabb made a motion which was passed, ordering the Superintendent of the Electrical Department to continue the new lighting system on North Main st. to the bridge.

Russell, Kan.—Citizens have voted \$25,000 for electric light plant and water works.

Madisonville, Ky.—All bids received for machinery for the municipal electric light plant have been rejected; new bids will be received; cost \$7,000.

Fitchburg, Mass.—The Fitchburg Gas and Electric Light Co. has petitioned the Gas Commission to be allowed to increase its \$385,000 capital stock by \$308,000 to fund \$275,000 debts incurred for construction and improvements and to furnish \$33,000 to complete the work.

Holyoke, Mass.—The Public Works Board is considering the illumination of High st.

Water Valley, Miss.—The ordinance granting a franchise to R. E. Ferguson & Co., of New York City, for the establishment of a gas plant in the city of Water Valley has finally been presented by Attorney Creekmore to the Mayor and Board of Aldermen; franchise stipulates that work shall begin within three months and be completed within 12 months.

Clarksburg, Mo.—E. N. Moody is interested in construction of electric light plant.

Monett, Mo.—City will make additions to electric light plant and building.—L. G. Knapp & Co., Kansas City, Engineers in Charge.

Bear Creek, Mont.—Chris Yegen, Billings, has applied for a franchise for an electric light and water plant.

Roundup, Mont.—An application for an electric light franchise has been made by a Mr. Gridley.

Port Jervis, N. Y.—Council has granted a franchise to the Interstate Hydro Electric Co. to construct a plant and do business; also franchises to a gas company and a street railroad company to be formed by same company.

Hankinson, N. D.—Chas. Hein and E. L. Kinney have petitioned for the extension of the electric lights from Wahpeton to this city.

Cincinnati, O.—The villages of Delhi, Home City, Fernbank, Addison, North Bend and Cleves have accepted proposition of city to furnish gas; villages will each lay their own pipe.

Lone Wolf, Okla.—Plans are being prepared by the Michel Cook Engineering Co., Joplin, Mo., for an electric light plant.

Muskogee, Okla.—To determine just where to place 50 street lights is to be the task of the Water and Light Committee soon, for preliminaries for securing the lights have been instituted; under franchise which the gas company holds here they are to furnish free that number of lights to the city; estimates on the cost of poles will be received very soon.

Okemah, Okla.—M. A. Earl, Muskogee, is preparing plans for electric light plant and water works; cost \$50,000.

Wagoner, Okla.—Citizens will vote in August on \$200,000 bonds for electric light and other improvements.

Jacksonville, Ore.—City has granted a franchise to the Jackson County Electric Light and Power Co. to erect pole lines for the transmission of power and light.

Mercer, Pa.—Owsley & Baucherle, of Youngstown, O., have been selected to prepare plans for a \$14,000 power house for county.

Wilkes-Barre, Pa.—The Wyoming Valley Traction Co. is considering the building of a large power house.

North Smithfield, R. I.—Village has voted \$12,000 for the installation of electric lights.

Lexington, Tenn.—City is considering

construction of electric light plant and water works; desires correspondence with consulting engineers; cost not over \$15,000.—H. E. Graper is interested.

Memphis, Tenn.—Ford, Bacon & Davis, contracting engineers, 24 Broad st., New York City, will soon award contract for proposed \$100,000 addition to power plant of Memphis Street Railway Co.

Alvord, Tex.—E. E. Gose, Decatur, is considering construction of electric light plant.

St. Albans, Vt.—The Vermont Power and Manufacturing Co. has supplied Council with designs for decorative street lighting and cost of installing arches and fixtures and has made special rate for current; if any of this system of street lighting is installed it will be on Main st.

Tacoma, Wash.—Engineer Frank Kelsey has changed the plans of the city power plant from 20,000-h.p. to 30,000-h.p.; plans will be ready for contracts by January 1.

Tacoma, Wash.—Councilman W. R. Giblett will endeavor to form an improvement district on Pacific ave. to compel merchants to erect cluster light poles in front of their places of business.

Linden, Wis.—City has granted the Mineral Point Electric Light Co franchise to furnish light and power.

Niagara Falls, Ont., Can.—The Cataract Power and Conduit Co. will build a power house; cost \$100,000.—E. D. Pitts, Niagara Falls, N. Y., Architect.

Niagara Falls, Ont., Can.—The Queen Victoria Park Board is considering the extension of the lighting system down the River road.

Verdun, Que., Can.—Council is considering the advisability of negotiating a loan of \$150,000; proceeds will be used for the installation of an electric light plant.

BIDS RECEIVED AND CONTRACTS AWARDED

Decatur, Ala.—New Decatur has made a new contract with the Decatur Light, Power & Fuel Co. to furnish lights for the city; contract reads that the city is to have 30 arc street lights, to be placed wherever the street committee may direct; these lights are to cost the city \$2,250 a year; additional lights can be had at the same rate; if a light fails to burn the city is to be rebated at twice the cost of the light; in the event the company fails to give proper service the contract may be annulled, and if the city fails to pay for the lights within 30 days the lights may be shut off.

Selma, Ala.—The question of furnishing lights for Selma is settled for the next ten years, as the Committee on Streets and Light, in their report to Council, recommended that the contract as submitted by the Selma Lighting Co. be accepted, and Council approved.

Moscow, Ida.—Moscow Gas Co. has been organized here, with a capital stock of \$25,000, and will proceed at once with the erection of its plant, the contract for which has been let to the Davis Acetylene Co., of Elkhart, Ind.—W. A. Clarke, Manager.

Portland, Ind.—Council has closed a contract with the Ames Iron Co., Cleveland, O., for furnishing equipment for new light and power plant, for \$12,105.

Newburgh, N. Y.—The contract for the illumination of the streets of Newburgh for the celebration of Hudson-Fulton week has been signed by Mayor McClung, representing executive committee, and by Mortimer Norden and F. C. Joutas, representing the Electric Carriage Call & Specialty Co. and the Central Station Operating Co., New York.

Reading, Pa.—The Metropolitan Electric Co. was awarded a 10-year contract, July 26, to furnish the city with 700 or more magnetite arc lights, 320 watts, at \$65 per annum; 500 or more incandescent Tungsten lights, of 75 watts, and including all the street lighting that may be desired other than arc lighting, at \$19.30 per annum; lighting city hall, at 6c. per 1,000 watt hours, and lighting the police patrol stable at 6c. per 1,000 watt hours.

Immediately after the award Marcus B. Eaches, a taxpayer, instituted equity proceedings to restrain the city from executing the contract. Metropolitan Electric Co. is a subsidiary of the Interstate Railways Co. Contract will amount to approximately \$100,000 a year.

George W. Beard & Co., city, have been awarded contract to build the United Traction Co.'s electric substations at Mount Penn, Mohnton, Robesonia and Sanatoga, which will cost about \$80,000.—Walter A. Rigg, General Manager.

Newport, R. I.—The G. & W. Mfg. Co., 26 Cortlandt St., New York, submitted low bid in the Navy Department, July 20, for the power plant work at the Naval Training Station, Newport, R. I., at \$11,630.

Huron, S. D.—Huron Light & Power Co. has awarded the contract to the Minnea-

polis Steel & Machinery Co., Minneapolis, Minn., for furnishing engines for the electric light plant; company will install one 100-horsepower and one 150-horsepower Muenzel producer gas engine, together with two 150-horsepower Muenzel gas producers to replace the present steam equipment; both engines will be belted to Allis-Chalmers generators.

Richmond, Va.—The only bid received, July 21, by the Council Committee on Electricity was submitted by the General Electric Co., of Schenectady, N. Y., which submitted two propositions, one lump sum bid for the electric equipment complete, through Hotchkiss & Gordon, local agents, for the total of \$96,592, or \$86,682 if allowed to use the present lamps of the Virginia Railway & Power Co. instead of new equipment; it also submitted a bid, independent of its local agents, for certain parts, as follows: Arc switchboard, \$1,900; lamps and cut-outs, \$24,060, and regulator transformer, \$12,220.

Dundas, Ont., Can.—John Hayman, London, secured contract for building the transformer station at Dundas for the Hydro-Electric Commission of Toronto, for about \$40,000.

FIRE EQUIPMENT

Ft. Smith, Ark.—City is considering erection of an engine house for Company No. 5; architect not yet selected.—D. B. Sparks, City Clerk.

Alhambra, Cal.—Chief Williams has recommended installation of 12 more alarm boxes and purchase of auto hook and ladder truck.

San Bernardino, Cal.—Council is considering the purchase of an auto fire wagon equipped with 1,000 ft. of hose and a chemical outfit; cost \$4,500.

Naugatuck, Conn.—Plans are being prepared for the erection of a fire house.

Stamford, Conn.—City will purchase auto chemical combination wagon, 4,000 ft. of hose and other equipment.—Address Chief Parker.

Waterford, Conn.—Council has ordered bids advertised for 300 ft. of 2½-in. hose.

Live Oak, Fla.—The Fire Committee is considering installation of a fire alarm system.

Augusta, Ga.—City will soon receive plans for engine house.

Bloomington, Ill.—City is considering erection and equipment of a new fire station.

Tuscola, Ill.—City will purchase 500 ft. hose.

Wheaton, Ill.—City will purchase hook and ladder truck.—Address John H. Kampp.

Knox, Ind.—Town will organize fire department.

Scottsburg, Ind.—City will organize and equip a fire department; engine house will be erected.

Warsaw, Ind.—City is considering purchase of a chemical wagon.

Norton, Kan.—City is considering purchase of 500 ft. hose.

Covington, La.—Town Council will set aside a fund for the use of the Fire Department; Jefferson Co. No. 1 and Chemical Co. No. 1 will soon have new buildings.

Lauraville, Md.—Town will erect engine-house.

Lawrence, Mass.—The Chief and Superintendent of Public Property have been authorized to act in conjunction with Committees to build a new fire house at the corner of Lowell and Oxford sts. and also install a new fire alarm system; an order has been adopted to have the Committee on Fire Department purchase an auto protective wagon and an automatic hoist for the aerial truck; also a quantity of first-class hose.

Charlotte, Mich.—Citizens have voted \$6,000 bonds for the erection of a fire engine house.

Duluth, Minn.—The West End Commercial Club is urging better fire protection.

Centreville, Mo.—Hotel owners have been notified by State Fire Marshal Ewell that they must place fire escapes on their buildings.

Atlantic City, N. J.—City has sold \$28,000 fire house bonds to the Provident Bank and Trust Co. of Cincinnati.

Elizabeth, N. J.—Chief Gerstung has recommended purchase of auto fire engine, new station for Engine 5, new fire alarm boxes and hose.

Paterson, N. J.—Mayor A. F. McBride has recommended that an engine be purchased each year until the department is satisfactorily equipped.

Carthage, N. Y.—Special Fire Department Committee has recommended the purchase of a combination chemical and hose wagon, installation of electric fire alarm station of at least 12 stations and erection of four sub-stations equipped with 300 ft. of hose.

Morristown, N. Y.—An engine will be purchased.

Verona, N. Y.—A hook and ladder and two-horse wagon will be purchased.

Athens, O.—City has appropriated \$500 for the purchase of ladders.

Muskogee, Okla.—Citizens have voted \$60,000 bonds for the enlargement and betterment of the Fire Department equipment.

Portland, Ore.—The Executive Board has authorized the City Auditor to advertise for bids for the fire engine house to be built at 15th and Montgomery sts. from plans prepared by Architect J. R. Wilson; new engine houses will shortly be constructed at 3d and Gilsan, another near the St. Vincent's Hospital, one at Mt. Tabor and one at Albina.

Scranton, Pa.—City will readvertise for bids for the new fire station in the 17th Ward. W. G. O'Malley, Director Public Safety.

West Chester, Pa.—Fire Company No. 1 will expend at least \$200 for additional uniforms to equip new members.

East Providence, R. I.—City has rejected all bids for \$75,000 fire district bonds.

Newark, S. D.—City is considering organizing volunteer fire department.

Temple, Tex.—The request of the Water Commissioners for an automatic fire alarm system connecting the city pump station and fire department headquarters simultaneously has been referred to the Fire and Water Committee.

Poultney, Vt.—City is considering purchase of 500 ft. of hose, spray nozzle, ladder truck and other supplies.

Seattle, Wash.—Council is considering a bill appropriating \$75,000 for the completion of the fireboat "Duwamish."

Wenatchee, Wash.—City will purchase more apparatus; fire limits increased.

Oconto Falls, Wis.—The fire department is considering purchase of additional equipment, including more hose and ladders.

Wausau, Wis.—City has issued \$20,000 fire protection bonds.

Moose Jaw, Sask., Can.—City is considering following recommendation of the Fire Chief: Equipment for the new fire house; purchase of an additional hose wagon; erection of a sub-station on South Hill; installation of four more fire alarm boxes and the addition of 1,000 feet of hose.

BIDS RECEIVED AND CONTRACTS AWARDED

Vincennes, Ind.—The city's two proposed new hose houses, one to replace No. 1 South 4th st., and one new one to be known as No. 4, to be located on East Vigo st., are to be built at once. Contract for construction of No. 1, let to J. L. Berry, of Lawrenceville, for \$8,725, and No. 4, let to A. Combs, city, for \$3,360. Contract for heating and plumbing and gas fitting in both buildings let to the Noble Plumbing Co., of Princeton; contract price for both houses, \$1,585. Contract for electric wiring of both buildings let to J. Carnahan & Co., of Washington, at \$126 for No. 1, and \$68 for No. 4. Total contract price for both buildings, heating, plumbing, gas fitting and wiring, \$13,864. Total appropriation for both buildings, \$15,000.

Newburyport, Mass.—Council awarded contract to the C. C. C. Hose Co. for hose, but Mayor Hunt refuses to attach his signature, as he claims company sold Chelsea, for 69¢ c., hose which it wants to sell to Newburyport for 75¢.

Syracuse, N. Y.—The Combination Ladder Co. was awarded contract for 9 Scagrave trussed ladders to cost \$366.

Utica, N. Y.—The Board of Contract & Supply has decided to purchase 2,100 ft. of fire hose for No. 8 Engine House, and ordered 700 ft. of hose at 80¢ per ft. from each of three local bidders, the Smyth-Despard Co., Utica Cycle Co., and Bannigan & Cooper, representing different hose manufacturers.

Norfolk, Va.—Four bidders on the contract for supplying the Fire Department with 4,650 ft. of hose, which was awarded by the Board of Control, named the same price, \$1 per ft. Consequently the Board allowed each to share in the contract. The awards were made to the Henry Walke Co., 1,800 ft.; Fabric Fire Hose Co., of New York; J. H. Kegebein, local agent, 1,800 ft.; the Eureka Fire Hose Co., of New Jersey, 1,050 ft. Bids were opened at the same time on a small order of chemical engine hose, but the awards were laid over.

ELECTRIC RAILWAYS

Birmingham, Ala.—Council has received a petition from W. J. Cameron, F. Y. Anderson, George C. Kelley and associates for a franchise for the operation of electric cars on a number of streets, including the condemning for quite a distance of the Birmingham Railway, Light and Power Co. tracks in the heart of town.

Redlands, Cal.—The Redlands & Yucaipa Electric Railway will build extension to Oak Glen.—W. D. Larrabee, Chief Engineer.

San Francisco, Cal.—Extensive improve-

ments are to be made in the Presidio and Ferries Electric Railway, the Directors of the company having decided to add to the equipment of the road and to make betterments in the roadbed.

Santa Rosa, Cal.—Council has granted a franchise to the Sonoma & Lake County Railroad to construct an electric railway; company's plans include the erection of a line to connect Cloverdale, Preston and Lakeport.—A. E. Dickinson, Ukiah, President.

Wilmington, Cal.—The Board of Trustees has granted to the Pacific Electric Railway a 50-year franchise to construct an electric railway on certain streets.

Grand Junction, Col.—The Grand Junction Electric Railway Co. will soon start work on the interurban railway between this city and Palisades; distance 17 miles.—E. A. Sunderlin, General Manager.

Steamboat Springs, Col.—The Farwell Mountain Co. is planning for construction of electric railway from city to northeast part of county.

Meriden, Conn.—Citizens have defeated proposition of Messrs. Paige and Danaher, of Bridgeport, to build a trolley line through Hubbard Park to West Peak and erect a hotel on the summit; defeat of the resolution was mainly due to the fact that the people claimed that a railway through the park would result in the contamination of the reservoirs in that vicinity; Mr. Danaher has stated that he intended to build the railway by making a loop around the park.

Washington, D. C.—A Swiss journal of recent date publishes the details of a concession to build an electric railway in Switzerland. It is granted to Mr. J. Jenny, of Worblaufen, and Mr. F. Leder, of Berne, acting as agents; and is for a single-track, meter-gauge electric railway from Berne to Zollikofen. Work must be begun within six months from approval of the plans and completed in 18 months. The total cost is estimated at \$1,265,290. The same journal states that a syndicate composed of Ad. Ribordy and H. Hallenbarter, of Sion, and Joseph Koth, of Wiler, has been granted a concession for the construction and operation of a single-track, meter-gauge electric line from Goppenstein to Blatten. Work to begin within six months after approval and to be completed within 18 months. The cost is estimated at about \$2,450,000.—Address No. 3635, Bureau of Manufactures.

Gainesville, Ga.—Gainesville Railway, Light & Power Co. has been chartered to build street railway from Gainesville Cotton Mills through city to New Holland and Chattahoochee Park; incorporators are W. A. Carlisle, W. H. Slack, H. H. Dean and A. S. Hardy.

Carpentersville, Ill.—Council has granted to the Elgin, Woodstock & Lake Geneva Railroad a 50-year franchise to operate a street railway.—J. A. Kirkland, Elgin, is interested.

Chenoi, Ill.—Council has received an application from the Joliet and Southern Traction Co. for a franchise.—Lee Fisher, Chief Engineer.

Galesburg, Ill.—Council has granted to S. F. Atwood a 25-year franchise to operate a street railway.

Hampton, Ill.—Town Board has granted a 20-year franchise to the Tri-City & Northeastern Interurban Railway.—J. W. Simonson, Port Byron, President.

Paxton, Ill.—The Board of Trustees has granted the Chicago, Kankakee & Champaign Electric Railway a 50-year franchise to construct an electric railway through this city.

Topeka, Kan.—The Kansas City, Kaw Valley & Western Railway Co. has secured a charter to build an electric line from Kansas City to Topeka; counties to be traversed by the proposed line are Wyandotte, Johnson, Leavenworth, Jefferson, Douglas and Shawnee; capital stock, \$1,500,000. J. W. McDaniel of Bonner Springs, A. L. Cooper and W. H. McCafferty of Kansas City, Mo., Charles Knabb of Hiawatha, and J. C. Finney of Bonner Springs, incorporators.

Providence, Ky.—The Kentucky Electric Railway Co. has made surveys for its proposed electric railway from Providence to Dawson Springs; distance 20 miles.—J. T. Edwards, President.

Algiers, La.—The Algiers Railway & Lighting Co. will build extension to the site of the proposed immigration station. R. S. Stearnes, General Manager.

New Orleans, La.—The Committee on Streets and Landings has made a favorable report on the ordinance by Mr. Grennan for the sale of a franchise for a street railway line from Lafayette ave. and Villere to Franklin and St. James ave.

Baltimore, Md.—The necessity of extending an electric car line through the Second district of the county is being urged by many of the residents of Granite, Woodstock, Hebbville and other villages; a route has been suggested from Woodlawn along the Windsor Mills and Old Court roads to Granite, which would take in Hebbville and

would be in easy driving distance of Randallstown, Marriottsville, Hernwood, Alberton and vicinity.

Fairview, Md.—Plans are under way for construction of railway from Fairmont to Fairview and Blacksville.—Clement L. Shaver, Fairmont, W. Va., Promoter.

Ironwood, Mich.—The Twin-City Railway Co. has made application for a franchise to extend its lines to Bessemer.

Trenton, N. J.—The Bell Telephone Co. has requested permission to demonstrate its telephone fire alarm system to replace the street box system.

Brooklyn, N. Y.—The Brooklyn Rapid Transit Co. will soon begin work on the extension of the Nostrand ave. trolley line from its present terminus at Flatbush ave. to Avenue U, near the grounds of the Gravesend race track.

Concord, N. C.—City has granted a franchise to construct electric railway lines to the Piedmont Carolina Railway; system will also be extended to several nearby towns.

Cedar Point, O.—The Cedar Point Railway Co. has been incorporated to build an electric railway along the lake shore.—W. C. Phelps is interested.

Columbus, O.—The Columbus, New Albany and Johnstown Traction Co. will build an extension from Gahanna to Johnstown.—L. P. Stephens, Ruggery Bldg., General Manager.

Tulsa, Okla.—The Tulsa Street Railway Co. will build an extension to Kendall College.

Clarion, Pa.—Application will be made by G. E. Arnold, R. M. Werner and T. S. Arnold for a charter for a corporation to be called Clarion & East Brady Electric Railway Co.

McKeesport, Pa.—Work on a new street railway to be operated between Portvue and McKeesport is to start very soon; road will be built by the Realty Co. of McKeesport and will be known as the McKeesport & Portvue Railway Co. James F. Woodward, member of the House of Representatives, is President; Israel A. Simon is Secretary and treasurer, and E. W. Pitts and J. W. Jones are Directors. Engineer Thomas W. White in a few days will submit to the company plans of several routes, one of which will be selected.

Scranton, Pa.—The Ft. Smith, Subiaco & Eastern Railroad Co. will extend its proposed electric railway from Subiaco to this city; distance 8 miles.

Pierre, S. D.—Articles of incorporation have been filed for the Riverview & Northern Wisconsin Railway Co. to construct a line, 30 miles in length, from Fairchild to Stanley, Wis., by way of Riverview. Incorporators are: I. Shoudy, B. E. Shoudy, Rockford, Ill.; D. W. Shoudy, H. E. Shoudy, Fairchild, Wis.; James S. Sebree, Pierre, S. D.

Clarksville, Tenn.—A party of prominent Hopkinsville, Ky., business men, accompanied by I. H. Jackson, of the Burns Construction Co. of Chicago, has visited this city to ascertain information as to the feasibility of constructing an interurban line connecting Clarksville and Hopkinsville.

Houston, Tex.—The Westmoreland Railroad has been chartered to build a railway other than steam power from this city to Bellaire; distance seven miles.—W. W. Baldwin, Max Eggert, A. J. Condit and R. B. Henderson, incorporators.

Kennewick, Wash.—C. A. Lundy, S. C. Emmons and G. F. Richardson have applied for a franchise to build an electric railway from this city through Horse Heaven to Kennewick Highlands.

Nighthawk, Wash.—The Okonogan Electric Railway Co. will push work on proposed road.—H. B. Skinner, General Manager.

Wheeling, W. Va.—The Board of Commissioners has received an application from the Wheeling Rapid Transit Co. to operate an electric railway through Ohio county.—A. M. Schenk, President.

Elkhart, Wis.—The Milwaukee & Fox River line will soon commence construction of the line to Stockbridge.

Plymouth, Wis.—City has granted a franchise to the Milwaukee & Fox River Valley Railway to build a street railway.

Morrisburg, Ont., Can.—The Morrisburg Electric Railway Co. will construct electric railway between Morrisburg and Ottawa via Williamsburg, Winchester, Cherterville, Morewood, Kenmore, Metcalfe and Greeley; distance 70 miles.—C. M. Willard, Box 45, Morewood, Ont., President.

North Cobalt, Ont., Can.—The Nipissing Central Railway will build an electric railway connecting Cobalt Port, Cobalt and Haileybury.—J. W. Fitzpatrick, North Cobalt, President.

BIDS RECEIVED AND CONTRACTS AWARDED

Fresno, Cal.—The Franklin Construction Co., Cleveland, O., has general contract for building the Fresno, Hanford & Summit Lake Interurban Railway.

BRIDGES

Bay Minette, Ala.—Charles Barclay, Volant, will secure permission to construct a 1,000-ft. bridge across the Perdido Bay.

Denver, Col.—Plans have been submitted by Engineers of City Tramway for extension of 16th st. viaduct from 16th and Platte to 16th and Central sts.

Danville, Ill.—All bids opened by the Highway Commissioners of Catlin Township and the Bridge Committee of Vermillion County for furnishing material and constructing the Rocky Ford bridge in Catlin Township have been rejected.

St. Charles, Ill.—The Township Highway Commissioners have decided to erect a bridge at the highway crossing of Brewster Creek near the Illinois Central tracks.

Goshen, Ind.—County Commissioners have decided to receive bids for construction of following bridges: York Township, over Elkhart River, cost \$1,000; Jackson Township, over Kiefer ditch, \$500; Union Township, Wagner ditch, \$1,250; Jefferson Township, Indian Creek, \$450; Elkhart Township, Rock Run, \$1,500.

Greenfield, Ind.—The Pennsylvania Co. has submitted to the County Commissioners plans for a stone bridge to cost \$8,500, which it is proposed to erect over the railroad crossing immediately east of this city, elevating the highway.

Hutchinson, Kan.—Citizens have voted \$15,000 bonds to construct a bridge over Cow Creek at Main and Ave. A; plans will be prepared by the city, on which bids will be received and contractors will be allowed to submit designs with bids; bridge must carry concentrated load of 20-ton roller and 200 pounds per square foot, except along the south side of Avenue A, where sidewalk will be built, and a strip 16 ft. wide in the center of Main st., where design shall be ample to carry double track of street railway and 90-ton standard steam railway freight car; foundation is sand and gravel of fair bearing capacity to a depth of 50 to 60 ft., except that a thin strata of clay of rather unreliable character is said to underlay the site at a depth of 15 to 20 ft. below the bed of the creek; soundings and tests will be made at once and reports mailed firms desiring them; as the bridge will have a width of nearly 300 ft. and numerous eddies and considerable velocity provisions must be made to prevent scour below the footings; it is possible on account of a diversion canal and headgates to shut off nearly all of the water so that there will be little danger of centering washing out; designs and bids will be considered by the Board of Commissioners on their respective merits and economy of construction for a first-class structure of permanent nature. —G. L. McLane, City Engineer.

Leavenworth, Kan.—By a decision of Lee Bond, County Attorney, the three bridges authorized by the voters at the last general election will be built; a special levy to meet the expense incurred will be made.

Leavenworth, Kan.—The Board of Commissioners of Leavenworth County has rejected bids for three bridges. —J. W. Niehaus, County Clerk.

Richland, Kan.—The County Commissioners have rejected all bids received for constructing the bridge across Camp Creek at Richland as they exceeded \$4,000 appropriation; new bids will be asked.

Topeka, Kan.—Citizens will vote August 24 on \$39,411.40 bonds for erection of a bridge across Kansas River. —C. B. Burge.

St. Francisville, La.—A representative of the Missouri Valley Bridge Co. has conferred with the Police Jury in regard to rebuilding the three iron bridges in the Seventh Ward that were washed from their foundations during the recent high water and heavy rains.

Medfield, Mass.—Norfolk County Commissioners have passed an order providing for the construction of a concrete arch bridge over Charles River on Main st.; cost \$16,000.

Hart, Mich.—Citizens will vote on \$8,000 bond issue for the construction of two bridges in this township.

Millis, Mich.—The County Commissioners of Norfolk County have decided to pay half the expense of a new bridge over the Charles River on the boundary line between Medfield and Millis, the other half to be borne by these two towns; new bridge is to be built with a 50-ft. arch and will be of reinforced concrete.

Duluth, Minn.—As a result of an agitation by members of the West Duluth Commercial Club, the North Pacific road will replace the wooden trestle over the Jenswold st. cut where Superior st. car lines turn into Outota st. by a steel structure.

Springfield, Mo.—Plans are being prepared by Engineer Fred J. Marshall for five new bridges and repairs to bridges in Greene county, Ozark, Mo., and Salt Creek. —W. B. Cloud, County Clerk.

Springfield, Mo.—Plans will be prepared by City Engineer H. G. Horton for the erection of steel, wood or reinforced con-

crete bridge at Benton ave. —J. W. Hackney, City Clerk.

St. Joseph, Mo.—The St. Joseph Belt & Interurban Railroad will construct an electric line to Savannah.

Bowling Green, O.—Wood County is considering construction of a bridge across the Portage River at New Rochester; cost over \$1,000.

Cuyahoga Falls, O.—Summit County is considering the rebuilding of the wagon bridge.

Sandusky, O.—Bids will be received by the Board of Commissioners of Erie County in about 15 days for the construction of a concrete arch at Hancock st.; cost \$15,000.

Sallisaw, Okla.—Paw Paw Township, Sequoyah county, has voted \$35,000 bonds for bridges and roads.

Corvallis, Ore.—Business men are urging the bridging of the Willamette at a cost of \$50,000.

Ontario, Ore.—Senate Committee has reported favorably bill authorizing construction of a bridge over Snake River.

Portland, Ore.—Council has ordered plans, specifications and estimates prepared for the new steel bridge to be erected over the Willamette at Broadway.

Roseburg, Ore.—The Umpqua Land & Water Co. has received plans for the bridge to be erected over the Umpqua River; bridge will connect the company's holdings with the city.

Saltsburg, Pa.—The Commissioners of Indiana and Westmoreland Counties are discussing the advisability of repairing the covered bridge which spans the Kiskiminetas River where the Conemaugh River and Loyalhanna Creek form the larger stream, and is one of the most important structures in Indiana county; it connects Saltsburg with Kiskiminetas school.

Knoxville, Tenn.—The Knox County Road Commission has decided to build a concrete culvert on the Middlebrook pike, seven miles from Knoxville.

Norfolk, Va.—Included in the plans of E. Jordan, lessee of the Norfolk County ferries, for the improvement of the terminals at Chestnut st., are the erection of a \$5,000 bridge at Chestnut st. and two modern steel bridges at Norfolk station; cost \$17,600.

Raymond, Wash.—Pacific County Commissioners have appropriated \$25,000 toward the construction of two bridges over Willapa River; cost \$30,000 each.

Seattle, Wash.—Council is considering an ordinance appropriating \$42,000 for the construction of a wooden drawbridge on Spokane ave. over the West Waterway.

Tacoma, Wash.—County bridge No. 5, across the Puyallup River near McMillen, has been condemned and a new one will be erected by the Commissioners; the new bridge will cost \$1,200 and will be of wood.

Wenatchee, Wash.—The Board of County Commissioners has ordered a new wagon bridge to be erected over the Chumstick near Leavenworth; bids will soon be called for.

Menasha, Wis.—City is considering construction of a bridge. —S. S. Little, City Clerk.

Brockville, Ont., Can.—Ratepayers will vote August 5 on a by-law to issue \$16,000 bridge debentures. —George K. Dewey, Town Clerk.

BIDS RECEIVED AND CONTRACTS AWARDED

Los Angeles, Cal.—The Union Iron Works of Los Angeles were the lowest bidder, July 13, for the Buena Vista st. bridge, at the following prices: 465 foundation piles, \$13.50; steel reinforcement, lump sum, \$15,600; arch centers, lump sum, \$16,480; 1,216 cu. yds. class A concrete, \$7.62; 6,057 cu. yds. class B concrete, \$6.35; 9,882 cu. yds. class C concrete, \$8.10; 590 cu. yds. class D concrete, \$8.47; 417 cu. yds. class E concrete, \$7.10; 78 cu. yds. class F concrete, \$10.10; 596 cu. yds. concrete surface, tool finish, \$1.50; 603 sq. yds. concrete surface, wash finish, \$1; 18,260 cu. yds. arch filling, 35c.; total bid, \$182,763. Totals of other bids were: Mercereau Bridge & Construction Co., \$196,505; F. J. Hall-Martin Co., \$199,924.40; F. C. Engstrom Co., \$225,274.40; C. Leonardt, \$239,539.80; Couchot & Thurston, \$271,376.22; J. V. McNeil, \$271,530.43; S. Birch, \$294,816.69. —Homer Hamlin, City Engineer.

San Jose, Cal.—Bids were opened by the Board of Supervisors for the Murphy Creek Bridge; the bids for a trestle and for a concrete structure follows: Dean & Hale, \$1,950 and \$2,450; John W. Williams, \$1,229 and \$1,695; W. L. Gillham & Son, \$1,369 and \$2,043; Ward & Martin, \$2,138; L. M. Scott, \$1,172 and \$1,692. The Williams bids were referred to the Committee of the Whole; all other bidders' checks were returned.

Willows, Cal.—Cotton Bros. have been awarded the contract to build the new dolphin for the Butte City Bridge; it will be constructed of steel and concrete, and will cost \$17,375; it will replace the one

swept away by the flood waters last winter.

Denver, Col.—The American Bridge Co. secured contract for steel work in extension of 16th st. viaduct, from the present terminus to Central st.; cost of entire improvement, \$75,000.

Denver, Col.—On July 24 bids were received by the State Engineering Department for the furnishing, fabricating and erection of steel superstructure of all steel bridges to be built by the State prior to January 1, 1911, and the American Bridge Co. was the low bidder, with prices as follows: Steel trusses, 3½c. per lb.; floor beams and joists, 3c. per lb.; steel lattice railings, 5c. per lb.; tubular piers with bracing 3-4-10c. per lb.; contract has not yet been signed up. —Charles W. Comstock, State Engineer; J. W. Johnson, Deputy.

New Britain, Conn.—Bids were received for a concrete bridge at the foot of South Main st., as follows: C. A. Sibley, \$725; Anton Squillicote, \$280.20; L. C. Baker, \$275; Thomas Webb, \$400; Suzzio & Di Nonno, \$503. It was voted to award the contract to Mr. Baker, the lowest bidder.

Milton, Fla.—A. D. McClain, Spartanburg, S. C., has contract at \$5,900 to construct steel bridge over Black River.

Atlanta, Ga.—The Atlanta, Birmingham & Atlantic Railroad Co., Alexander Bonnyman, General Manager, Atlanta, Ga., has awarded contract to American Bridge Co., New York, for erection of 8 steel bridges.

Belleville, Ill.—The Eischhof-Kenner Construction Co. has been awarded the contract for the building of a concrete bridge over the branch in West's pasture on Maple av.

Manchester, Ia.—The Delaware County Commissioners have awarded contract for erecting a concrete bridge over the Maquoqueka, at Bailey's Ford, to N. M. Stark Bridge Co., of Des Moines, for \$5,650.

Augusta, Me.—The contract for the erection of the superstructure of the bridge at Fishon's Ferry was awarded to the American Bridge Co., of New York, its bid of \$27,850 being the lowest; other bidders were the Penn. Bridge Co., of Beaver Falls, Pa.; the Pennsylvania Bridge Co., of Philadelphia, and the Canton Bridge Co., of Canton, O.

The contract for the erection of two piers and the abutments was awarded to R. D. Shanahan, of Portland, for approximately \$17,000. The other bidders were J. L. Parkin & Son, of Fairfield; J. W. Blunt, of Skowhegan, and W. H. Ellis, of Boston.

The entire bridge is to be of steel, 600 ft. long, with a middle span of 300 ft. and two other spans each of 150 ft. The bridge will be constructed strong enough to provide for the construction of an electric car track and passage of cars should an electric road be built.

Woodlawn, Md.—Contractors Simmers & Barnes, of Bays Corner, have received the contract for the construction of a wooden bridge over Rutler's Creek, at Woodlawn.

Kansas City, Mo.—Board of Public Works has awarded contract to Midland Bridge Co., city, at \$10,176, to construct concrete bridge over Brush Creek, on Prospect ave.

Carlsbad, N. M.—The Midland Bridge Co., Kansas City, Mo., has secured contract to erect 3 bridges for the county, one at Artesia, to cost \$12,000; one at Carlsbad, to cost \$10,000, and one at Malaga, to cost \$2,700.

Cincinnati, O.—Bids were received on contract for repair of bridge over Millcreek on Spring Grove ave., opposite the Procter & Gamble plant, which, it is estimated, will cost \$4,110; there were only three bidders, and F. J. P. Brackett was the lowest bidder. Contractors Gephart and O'Malley were the only bidders on the contract for furnishing piling for a culvert on the Duck Creek road improvement. The estimate on this work was \$1,455.

Tuscarawas, O.—Bids were received by the County Commissioners at New Philadelphia, for constructing a reinforced concrete arch bridge over Tuscarawas River in Warwick Township, near Tuscarawas, and the contract has been awarded to Swanson Bros., of Massillon, for \$31,197. —A. V. Donahay, County Auditor.

Kittanning, Pa.—Contract for constructing steel bridge over Plum Creek has been awarded to Penn Bridge Co., Beaver Falls, for \$2,687. —John A. Black, Chairman County Commissioners.

Moosic, Pa.—McConville & Fitzpatrick, Pittston, have secured contract for constructing bridge, at \$5,400.

Philadelphia, Pa.—Bids were received, July 21, for Schedule A bridges; following are successful bidders for each bridge: First, bridge on Chelton ave., under North Pennsylvania Railroad, 42d Ward, double track steel plate girder bridge, 80-ft. span, on concrete abutments, McNichol Paving & Construction Co., \$38,772; 2d, bridge on 62d st., over Philadelphia, Baltimore & Washington Railroad, 40th Ward, reinforced concrete highway bridge, 79 ft. wide, Hennebique Construction Co., \$28,490; 3d, bridge on Roberts ave., under Chestnut Hill branch of connecting railway, 38th Ward,

St. Louis, Mo.—Abstract of bids received July 27, for work embraced in letting No. 9,565, for furnishing all materials, tools and labor necessary for the river and shore piers of the Municipal Bridge over the Mississippi River at St. Louis, Mo., constituting the first section or part of the Municipal Bridge as authorized by Ordinance No. 24,457. Contract awarded Missouri Valley Bridge & Iron Co., Leavenworth, Kan.

BIDDER	Character of Work	Quantities	Rate	Limestone	Granite	Sandstone
1 Kahmann & McMurtry...	Foundation work below cutting edge.....	3,492 cu. yds.	\$ 13.48	\$ 4,707.22	\$ 4,707.22	\$ 4,707.22
	Cutting edge to top of crib.....	211,397 "	13.48	284,963.16	284,963.16	284,963.16
	Top of crib to coping.....	166,794 "	10.10	168,461.94	235,179.54	196,816.92
	Coping and bridge seats.....	101,320 "	11.80	20,264.00	20,264.00	20,264.00
	Total.....		2.00	\$478,396.31	\$545,113.91	\$506,751.29
2 Missouri Valley Bridge & Iron Co.	Foundation work below cutting edge.....	3,492 cu. yds.	\$27.00	\$9,428.40	\$9,428.40	\$9,428.40
	Cutting edge to top of crib.....	211,397 "	12.90	272,702.13	272,702.13	272,702.13
	Top of crib to coping.....	166,794 "	9.50	158,454.30	214,330.29	185,141.34
	Coping and bridge seats.....	101,320 "	12.85	19,250.80	19,250.80	19,250.80
	Total.....		11.10	\$459,835.63	\$515,711.62	\$486,522.67
3 The Pneumatic Caisson Co.	Foundation work below cutting edge.....	3,492 cu. yds.	\$50.00	\$17,460.00	\$17,460.00	\$17,460.00
	Cutting edge to top of crib.....	211,397 "	18.00	380,514.60	380,514.60	380,514.60
	Top of crib to coping.....	166,794 "	14.65	244,353.21	358,607.10	283,549.80
	Coping and bridge seats.....	101,320 "	21.50	20,264.00	20,264.00	20,264.00
	Total.....		17.00	\$662,591.81	\$776,845.70	\$701,788.40
4 The Foundation Co.	Foundation work below cutting edge.....	3,492 cu. yds.	\$28.00	\$9,777.60	\$9,777.60	\$9,777.60
	Cutting edge to top of crib.....	211,397 "	15.50	327,665.35	327,665.35	327,665.35
	Top of crib to coping.....	166,794 "	12.00	200,152.80	266,870.40	218,833.73
	Coping and bridge seats.....	101,320 "	16.00	19,250.80	19,250.80	19,250.80
	Total.....		13.12	\$556,846.55	\$623,564.15	\$575,527.48

3-track, 3-span, steel plate girder bridge, on concrete abutments and piers, Filbert Paving & Construction Co., \$34,910; 4th, bridge on line of Hunting Park ave., under Chestnut Hill branch of the connecting railway, 38th Ward, double track, 3-span, steel plate girder bridge, on concrete abutments and piers, John McMenamy, \$34,593, and 5th, bridge on Hunting Park ave., under Norristown branch of Philadelphia & Reading Railway, 38th Ward, double track, 3-span, steel plate girder bridge, on concrete abutments and piers, McCormick & Co., \$37,252.—George R. Stearns, Director Department of Public Works.

Pittsburg, Pa.—Because 100 automobiles an hour on Sundays are shut off from the rear entrance to Schenley Park, via the Forward Ave. Bridge, Mayor Magee has awarded a contract to reconstruct the bridge, which has been closed for a long time; the cost will be \$14,840, and must be completed in 60 days.

Greenville, S. C.—Greenville and Pickens counties have awarded contract to A. D. McClain, Spartanburg, S. C., to construct wooden bridge over Saluda River, at \$3,100.

Kalama, Wash.—Burnham & Byrnes, of Kelso, have been awarded contract by Commissioners of Cowlitz County to construct a 150-ft. span steel bridge over the Kalama River, in Township 6 North.

Barboursville, W. Va.—Cabell County has awarded contract to Brackett Bridge Co., Cincinnati, O., at \$12,395, to construct steel and iron superstructure for bridge over Guyandotte River.

Commonwealth, Wis.—J. Young & Bros., have secured contract to construct iron and concrete bridge, 128-ft. span, across Pine River, Commonwealth, at about \$4,500.

MISCELLANEOUS

Birmingham, Ala.—The Board of Aldermen has appropriated \$15,000 for the purchase of equipment for the Sanitary and Street Department; Street Commissioner McCartin, Mayor O'Brien and the Chairman of the Sanitary, Street and Finance Committees have been appointed to purchase equipment.

Alameda, Cal.—Council will soon take up matter of building a municipal wharf on the estuary; also of opening the streets in the west end to the estuary.

San Bernardino, Cal.—Councilman Rensch has reported an estimate of \$1,400 by Los Angeles makers for an oil heating plant composed of two tanks under ground, a pump, electric motor and some concrete work; plans and specifications have been ordered so that bids may be called for.

Aurora, Ill.—Alderman William Knuth has a plan by which water can be furnished for sprinkling at very little cost to the city; it is the plan of Alderman Knuth to present to the Council in the near future a resolution asking that a small pumping station be erected on the bank of the river for the purpose of extracting water for sprinkling; cost of erecting and maintaining the plant could be borne by the city and the water sold to firms who now are paid by merchants to sprinkle the street.

Elgin, Ill.—Health Officer Adolph Fisher is urging that proper facilities for disposing of garbage be provided.

Goshen, Ind.—Citizens are proposing that the city purchase a crematory to dispose of the garbage.

Elkhart, Ind.—Collection and disposition of garbage in Elkhart are far from satisfactory and crematory subject is being considered.

South Bend, Ind.—The Board of Safety has favorably recommended resolution to purchase a \$1,000 patrol wagon; motorcycle will also be purchased.

Pittsburg, Kan.—Mayor Cliggitt is in favor of the issuance of bonds for park purposes.

Topeka, Kan.—Councilman L. E. Fisher is advocating the construction and operation of a municipal garbage disposal plant.

Boston, Mass.—The Park Department has called upon Mayor for funds to construct boat landing at Charlesbank to replace present structure in the Charles River basin.

Holyoke, Mass.—Three reservoir sites considered by City Engineer James L. Tighe and Supt. John J. Kirkpatrick suitable for the erection of ice houses have been reported.

Lawrence, Mass.—The Board of Aldermen has authorized the Board of Health to purchase an incinerator plant at a cost of \$40,000; also has appropriated \$10,000 to remedy the Spicket River nuisance.

Charlotte, Mich.—Citizens have voted \$6,000 bonds for a City Hall.

Butte, Mont.—City is considering erection of an emergency hospital and a detention department.—Alderman J. T. Murphy, Chairman Special Committee.

Atlantic City, N. J.—City has sold \$379,000 municipal bonds to the Providence Savings Bank and Trust Co., of Cincinnati; \$18,000 of this amount is for repairs to City Hall.

Buffalo, N. Y.—A turning basin, 800 ft. long and 700 ft. wide will be constructed at junction of Buffalo River and the Blackwell Canal, large enough for the largest freighters on the lakes to turn in; cost of dredging earth and rock to depth of 23 ft. is estimated at \$110,000.

Carthage, N. Y.—Special Committee has recommended purchase of a street sprinkling wagon.

New York, N. Y.—Architect Edw. P. Vasey is preparing plans for a five-story station house, prison and garage.—Wm. F. Baker, Police Commissioner.

Niagara Falls, N. Y.—Council has received from the Board of Public Works recommendations that the city purchase the Trott property on Main st. opposite Ashland ave. and the Frank-Isaacs property on Walnut ave. for the establishment of city parks, the erection of city buildings, etc.; matter has been referred to a special committee appointed by the President and includes President Tucker and Aldermen Noeller, Jess, Thompson and Mansfield.

Riverhead, L. I., N. Y.—The Pauly Jail Building Co., New York City, is preparing plans for a \$125,000 jail for Suffolk County.

Columbus, O.—Chief A. C. Burley, Super-

intendent of Construction for the Safety Department has completed the plans for the new police patrol stations which will be constructed this fall.

Piqua, O.—The Board of Safety has been requested and will purchase a motorcycle for the use of Chief of Police Gehle in running down violators of speed ordinances and for the general use of the Police Department.

Youngstown, O.—Board of Health has declared inadequacy of crematory plant; new plant being considered.

Muskogee, Okla.—City has decided to purchase a street sprinkler.

Oklahoma City, Okla.—Mayor Scales has sent data to Rudolph Herring, New York, who has been employed to draft plans for a home-made incinerator for Oklahoma City; plan contemplated the use of garbage as fuel.

Wagoner, Okla.—Citizens will vote in August on \$200,000 bonds for a City Hall and other improvements.

Portland, Ore.—The City Auditor will at once advertise for bids for a 100-ton modern garbage crematory to be built at Guild's Lake.

Scranton, Pa.—The question of public lavatories for the city will once more be taken up when the Treasurer's Committee of Council will meet to consider the ordinance which provides for the issue of bonds in the sum of \$25,000 for the purchase of land and the erection thereon of four lavatories to be located in as many different sections of the city, one in the central city, one in North Scranton, one in West Scranton and one in South Scranton.

West Newton, Pa.—Town is considering purchase of a site for the erection of a garbage plant.

Wilkes-Barre, Pa.—The Commissioners of Plains Township have instructed the Building and Finance Committees to proceed with the erection of the Town Hall and lock-up, for which an appropriation of \$15,000 was made at a previous meeting; plans are being prepared by Reilly & Schroeder, of this city; structure is to be 40x80, frame construction with a veneering of brick.

Yardley, Pa.—Residents of the vicinity of Taylorsville, the Pennsylvania "Washington's Crossing," and persons interested in the plan some time ago are again active along the line of having a public park at the spot where Washington stopped at Taylorsville; former Councilman Charles T. Eastburn, of this place, is interested.

Dallas, Tex.—Specifications have been approved as submitted by Mayor Hay for the automobile to be furnished for the City chemist; it is not to be less than two-cylindrical, with removable top and curtains; is to have a speedometer and be modern in every way; bids have been ordered for the machine.

Lynchburg, Va.—City Auditor John M. Otey is preparing to advertise the bonds city proposes to issue shortly for municipal improvements; this issue will be \$400,000 and bids will be received up to August 16.

Norfolk, Va.—A petition is being circulated to be presented to the Board of Control asking that body to petition the Coun-

cils to widen the Chestnut st. ferry bridge; if granted the ferry lessees will expend \$8,800 in building double waiting-rooms; \$5,000 for double ferry slip, and \$1,000 for racks for landing boats.

Tacoma, Wash.—Councilman A. L. Hawley is urging the installation of an up-to-date garbage and refuse incinerator.

Walla Walla, Wash.—City will expend thousands of dollars in improvements to phone system.—C. P. Van Hutte, Manager.

Wapato, Wash.—Council has accepted the preliminary sketch for the new City Hall submitted by W. E. Smith, of North Yakima; bids will be called for at once.

Wheeling, W. Va.—The Board of Control is discussing plans for building the proposed crematory.

Wheeling, W. Va.—The Police Committee will recommend to the Board of Control the installation of a police signal service system and the purchase of a motorcycle machine and an automobile combination patrol and ambulance.

Niagara Falls, Ont., Can.—The Queen Victoria Park Board has decided to erect two bath houses at Dufferin Islands.

BIDS RECEIVED AND CONTRACTS AWARDED

New Britain, Conn.—The Board of Public Works has received bids for the new toolhouse on the city property on Elm st., as follows: A. P. Leavitt Co., \$2,144; Chas. Templeman, \$2,150; T. Hennessey & Son, \$2,167; Rutherford Bros., \$2,954; it was voted to award contract to the A. P. Leavitt Co., the lowest bidders.

Augusta, Ga.—Contract for the erection of a jail workshop at the south of the jail and on the site of the present stable was awarded to H. T. Clark, of Augusta, the lowest bidder, for \$8,295. The other bidders were: Reuel J. Noyes, of Augusta, \$8,483; F. B. Smith, of Augusta, \$8,834; C. E. Hoxie & Co., of Augusta, \$10,200. The building will be of granite, 30x50, with two stories and basement; the workshop will be on two upper floors and the stable in the basement.

Covington, Ky.—E. H. Ryan's bid of \$4,000 for disposing of garbage for one year has been accepted.

H. Meyers & Co. have been awarded a contract, for \$145, for catching dogs for one month.

Louisville, Ky.—Contracts for the winter uniforms of the Police Department were let by the Board of Public Safety: S. A. Hilpp & Co., local manufacturers, secured the contract to furnish winter overcoats for officers and men at \$20 each; double-breasted coats for \$20 each; single-breasted coats for patrolmen, \$17 each; trousers for officers and men, \$7 each. Shiemann & Bosse, of Louisville, secured the contract to furnish the caps for the Chief, Majors and Captains at \$4.50 each; for Lieutenants, Sergeants and Corporals, \$3.50 each; for patrolmen, \$1.75 each; hat covers, 65c. each. Gloves will be furnished by Gus C. Rietze, gauntlet style, lined, at \$2.15 a pair; unlined, \$1.90 a pair; plain, \$1.75 a pair. Out-of-town firms bid, but the local dealers were the lowest.

Monroe, La.—In response to the call for bids for City Hall, three firms entered the lists with bids as follows: Pauly Jail & Building Co., of St. Louis, \$69,870; A. Skoog, of Monroe, \$72,521; Southern Building Co., of Louisville, \$59,750. These figures are on just the bare building, without any furnishings and walks, which will bring the total cost up to about \$100,000.

New Orleans, La.—The Hercules Co., Ltd., city, was awarded the contract by the Orleans Levee Board for the construction of the Carrollton reach levee and revetment, the consideration being about \$150,000; this is a new construction company, recently incorporated in this city, and this is its first big contract. General Arsenne Perrillat, for many years a member of the State Board of Engineers, appeared before the Orleans Levee Board as the representative of the Hercules Co., in the capacity of Consulting Engineer. Mr. Emile Ferrillat, a brother of the General, is President. Their bid for this big Carrollton contract was 33 1-3c. per cu. yd. of earth; \$41.10 per 1,000 for B-M cypress, and \$61.25 per 1,000 for B-M creosoted pine for revetment work. The Hercules bid was about \$21,000 under the next highest competitor, which was A. L. Patterson & Co., city. Each bid was accompanied by \$1,000 cash, or a certified check for that amount. Eleven bidders entered the contest as follows:

Name of Bidder.	cu. yd.	earth.	press.	pine.
A. L. Patterson & Co.	42c.		\$27.00	\$51.00
Scott, Smith & White	42		37.00	57.00
Hercules Co., Ltd.	33 1-3		41.10	61.25
Becker & Co.	55		42.00	60.00
Mitchell, Borne & Co.	80		39.00	55.00
Morse & Egan	43 3-4		39.00	58.50
Hampton Reynolds	52		45.00	65.00
A. Rupel	49 1-2		32.50	53.75
Liman & Gibson	58.90		29.50	49.00
Clark & Frey	43.90		37.00	76.50
Robt. C. Story & Co.	73		36.50	56.40

Holyoke, Mass.—Holyoke Automobile Co. has been awarded contract for Knox car for the Water Board, for \$2,850, on account of its higher power, greater seating capacity, and the fact that top, extra seats and all other accessories are included in the price; the larger car will give a larger tool box, and it has a removable tonneau that can be replaced by a tool box; the car will be lettered "H. W. W." The unsuccessful bidders were as follows: Buick, \$1,850; Elmore, \$1,750; Jackson, \$1,750 and \$2,150; Overland, \$1,410, \$1,520 and \$1,620.

Albany, N. Y.—Four large canal contracts aggregating nearly \$4,000,000 were awarded by F. C. Stevens, State Superintendent of Public Works, three of them for canalizing the Mohawk River. The 4th contract, which would complete this work, from Rexford Flats to Little Falls, on which the American Pipe & Construction Co., of Philadelphia, is the lowest bidder, cannot be awarded without the approval of the Canal Board and State Engineer, as the bid is over 10 per cent. in excess of the State Engineer's estimates. The contracts awarded are: No. 20—A. improving the river and land line of the canal between Little Falls and Mindenville, to Houston

Barnard, Rochester, \$490,592. No. 20—B, dredging channel in the Mohawk River, between Mindenville and Canajoharie, S. Pearson & Son, Inc., Long Island City, \$933,194. No. 20—C, dredging channel in the Mohawk River, from Canajoharie to Yosts, American Pipe & Construction Co., Philadelphia, \$585,720. No. 23, constructing the canal, land line, from Kings Bend to Genesee River, Millard & Lupton Co., Philadelphia, \$1,887,036.

Tarentum, Pa.—Contract for the erection of a steel garbage furnace has been let by the Borough Council of Tarentum to Decarie Incinerator Co., at \$11,900.

There were three bids submitted as follows: Morse-Boulger Destructor Co., 15-ton furnace, \$5,700, and \$1,500 additional for 150-ft. stack; Lewis & Kitchen, 15-ton all-steel furnace, \$6,995, brick with steel roof and concrete floor, \$7,485; Decarie Incinerator Co., \$11,200 for furnace with a guide steel stack, and \$11,900 for a furnace with self-supporting stack; a brick stack will be used instead of steel, which will make the furnace cost about \$12,000.

Memphis, Tenn.—The contract for the new addition to be added to the City Hospital has been let to Jos. Bartl & Son and work will start immediately; the new addition, which will cost \$15,000, the lowest bid made for the work, will be on the east wing; it will be two stories; five private wards will be installed on each floor.

Galveston, Tex.—The Texas Portland Cement Co., of Dallas, has been awarded contract to furnish cement with which to build the causeway across the bay at Galveston; 110,000 barrels of cement will be required to complete the structure; the cement needed will load between 600 and 700 cars. It is to be delivered at the rate of 8,000 barrels per month, or in the course of a little more than a year.

Houston, Tex.—Engineer F. L. Dormant met with the members of Council when the bids for the improvements to be made at the turning basin were considered, with a view to awarding the contract for the work. The bids for the work were as follows:

Texas Grading Co. bid: Earth excavation for railroad yards, per cu. yd. (50,000 yds.), 27.4c.; loose rock in this excavation, if any, 65c.; earth excavation to the wharf level (240,000 cu. yds.), 27.4c.; loose rock in this excavation, if any, 35c.; solid rock in this excavation, if any, 65c.

Smith & Co.'s bid: Earth excavation for railway yards, per cu. yd., 18c.; loose rock excavation, if any, 25c.; solid rock, if any, 40c.; earth excavation to wharf grade, 23c. per cu. yd.; loose rock, if any, 25c.; solid rock, if any, 40c.

Gulf, Atlantic & Pacific Co.'s bid: For the excavating to the wharf level and for the dredging below the wharf level to a depth of 20 ft. below mean tide (240,000 cu. yds.), per cu. yd., 32c. This company bids to do the work of dredging below the wharf to 20 ft. below mean low tide, alone, for 24c. per cu. yd. The company specified that if it was desired to place the waste on land adjacent to filter beds, not over 2,500 ft. distant and not over 50 ft. above mean low tide, the price per cu. ft. would be 40c. The company offered to do the levees at cost, plus 10 per cent.

TOO LATE FOR CLASSIFICATION

STREET IMPROVEMENTS

Pasadena, Cal.—Bids will be received by Street Superintendent Beyer for a 13-ton road roller.

Wilmington, Del.—The Levy Court has rejected all bids for building mill dam road in Christiana; new bids will be asked.

Green Springs, Fla.—Citizens have voted a five mill levy for good roads.

Cairo, Ill.—City is considering improvement of 21st and West 21st sts., by construction of new concrete pavement; cost about \$32,000.—R. D. Hatcher, City Clerk.

Hutchinson, Kan.—Bids will be received August 6 for construction of about three miles curbing.—S. A. Poe, City Clerk.

New Orleans, La.—An ordinance has been prepared for banquettes on Spruce st., and another for paving Jeannette st. with Pitch Lake asphalt.

Omaha, Neb.—Council has received three petitions for paving; three other streets will be paved; City Engineer Craig has estimated resurfacing of Center st., at \$8,000, with macadam the full width of street, or \$5,000 for roadway in center.

Schenectady, N. Y.—Bids will be received by State Highway Department, August 13, for repairing about 12 sections of highways.

Grand Forks, N. D.—Bids will be received, August 27, at 8 p. m., for paving District No. 14.—W. H. Alexander, City Auditor.

Cincinnati, O.—Bids will be received by

Board of Public Service, August 10, for improvement of Harrison ave. by grading and paving with granite block.—J. J. Wenner, Clerk.

Cleveland, O.—Bids will be received, August 12, noon, for grading and paving with brick three streets, and paving with dressed V lock Medina stone three streets.—W. J. Springborn, Board of Public Service.

Steubenville, O.—The Portland and Dillonvale \$50,000 pike bonds have been awarded the Fifth-Third National Bank of Cincinnati, for \$31,301.

Guthrie, Okla.—County Commissioners of Logan County are considering calling an election for \$300,000 bonds for road improvements.

Philadelphia, Pa.—Bids will be received, August 11, noon, for three contracts pertaining to abolishment of grade crossings.—G. R. Stearns, Director, Public Works.

Reading, Pa.—Select Council may reconsider vote on \$400,000 loan, and will likely pass it at its next session.

Rochester, Pa.—Citizens have defeated proposition to issue \$100,000 bonds for paving streets and erecting city buildings.

Scranton, Pa.—The Lackawanna Railroad Co. is planning a subway under tracks at Ash st., and paving a part South Washington ave. and widening and improving Bogart Court.

West Hamburg, Pa.—Proposed State road from West Hamburg through Tilden Township to Shartlesville is now assured; engineers have been ordered to make survey.

Errol, Tenn.—Sullivan County will sell \$200,000 bonds, September 2, for construction of roads.

Chattanooga, Tenn.—Paving bonds, \$29,269.03, have been awarded to the First National Bank of Toledo, O., on a premium of \$347.

Knoxville, Tenn.—Bids will be received August 12, noon, for paving Improvement District No. 81.—W. P. Chandler, Recorder.

Hamilton, Tex.—Citizens will soon vote on \$300,000 bonds for improving public roads.

St. Albans, Vt.—Citizens have voted \$35,000 bonds to begin reconstruction of streets.

Green Bay, Wis.—Mayor Abrams, City Engineer Reed, Chairman Gross of the Committee on Streets and Bridges, and other Aldermen, have visited Fond du Lac to inspect the cement pavements; material might do for use on the connecting streets which the Council may pave this summer.

BIDS RECEIVED

Baltimore, Md.—The Board of Awards has opened bids for the paving of Edmondson ave. from 2d st. to Gwynns Falls Bridge; contract was let to the F. E. Schneider Paving Co. at its bid of \$77,213.05.

Charleroi, Pa.—The contract for grading and paving 7,000 yds. of street has been let by Borough Council, the successful firm being the Hallam Construction Co., of Washington, which bid \$1,045 below Thomas Arrigo, the highest bidder.

SEWERAGE

Waterbury, Conn.—The Board of Public Works will construct as much of Great Brook conduit as can be done for \$4,000.—R. A. Cairns, City Engineer.

Washington, D. C.—Acting Engineer Commissioner Kelly has ordered sewers in 38th, Chesapeake and Irving sts. N. W.

Baltimore, Md.—Specifications for construction of four stretches of sewer, involving total expenditure of \$250,000, have been approved by Sewerage Commissioners; of four sections, three are in northwestern section of the city; stretches are as follows: Forest Park sewerage disposal works; trunk sewers, Forest Park; Jones' Falls interceptor; lateral sewers, eastern section of city; bids will be received September 1, till 11 a. m.

Syracuse, N. Y.—Bids will be received Aug. 25, noon, for completing contract for improvement of Onondago Creek, 2 1-3 miles. Contract No. 2, \$10,000 check; Harry J. Hamlin, secretary. Intercepting Sewer Board. See Proposals, P. 218.

Fremont, O.—The First National Bank has been awarded \$5,100 sewer bonds at \$148.75 premium.

Old Forge, Pa.—Council has passed ordinance for extension of sewer on Albion st.—T. F. Corcoran, Clerk.

West Chester, Pa.—Council has again taken up matter of sewerage system; \$200,000 will be needed.

Wilkes-Barre, Pa.—Bids will be sought at once for the new sewer to be built from Lehigh Valley Railroad and East End section of the city to the river.

Wilkes-Barre, Pa.—Bids will be received August 25, noon, for constructing 7-ft. cir. brick or concrete sewer.—B. K. Finch, City Engineer; C. M. Bowman, Chairman Sewer Committee.

Knoxville, Tenn.—Board of Public Works will advertise for bids for sewerage Scott st., which is to be paved.

St. Albans, Vt.—Citizens have voted \$40,000 bonds for reconstruction of sewers.

San Antonio, Tex.—Bids will be received August 9, 11 A.M., for construction of Prospect Hill sewer system.—Fred Fries, City Clerk.

BIDS RECEIVED

Oconto, Wis.—Sewer contract has been awarded to Frank Smith; contract consists of laying sewer pipe of various sizes and the building of manholes wherever required; number of feet of sewer pipe to be laid in the various sewer districts within the city is 2,073 ft.; bid was \$1,600 for the trenching and furnishing of pipe and all material and labor; manholes are to be built complete for \$30 each.

WATER SUPPLY

Tuscaloosa, Ala.—Council has adopted recommendations of Water Commission in matter of extending water mains and otherwise improving system.

Paragould, Ark.—Council has decided to enlarge and improve the city water works.

Wakeeney, Kan.—Citizens have voted, second time, to issue \$30,000 bonds for establishment of water works.

New Haven, Conn.—Whitneyville Improvement Association is urging installation of fire hydrants.

Washington, D. C.—Acting Engineer Commissioner Kelly has ordered following water mains laid: 1060 ft. of 8-in. main, 13th st.; 1,325 ft. 8-in. main, Kansas ave.; also 200 ft. 8-in. main, Georgia ave.

Sutton, Neb.—Citizens have defeated proposition to issue \$33,000 water bonds.

Auburn, N. Y.—City will advertise for bids in the late fall or early winter for filtration plant; cost \$170,000.—Hazen and Whipple, Engineers.—J. W. Ackerman, Superintendent Water Board, Resident Engineer.

Painted Post, N. Y.—Charles C. Hopkins, Rome, is making plans for municipal water system; \$20,000 bonds will be sold.

McMinnville, Ore.—Water Committee has sold \$30,000 water bonds to A. D. Leach & Co., Chicago.

LIGHTING AND POWER

Little Rock, Ark.—The Ouachita Power Co. has been incorporated; dam will be constructed on the Ouachita River; capital, \$50,000.

Kendrick, Ida.—Richardson Bros., Wallace, will start work on proposed electric light plant next month.

Wakeeney, Kan.—Citizens have voted second time, to issue \$10,000 electric light bonds.

Rockville, Md.—Town Council and Washington Electric Power Co. have agreed upon terms for the electric lighting of houses; contract will be signed as soon as it is passed upon by the Corporation Counsel; town owns an electric plant, but capacity is only sufficient for street lighting purposes.

Holyoke, Mass.—City has sold \$20,000 bonds to purchase gas pumps.

Hastings, Neb.—Time for receiving proposals for new generator and turbine has been extended to August 9.

Sutton, Neb.—Citizens have voted to accept electric light proposition.

Grand Forks, N. D.—Bids will be received, August 9, for laying underground wires and installing lamp posts.—W. H. Alexander, City Auditor.

Ardmore, Okla.—Oscar Ayres will install electric power plant on Washita River.

Fort Worth, Tex.—The 9th Ward Improvement Club is urging installation of gas mains.

Quanah, Tex.—Proposition has been made by F. F. Winton, representing the Ideal Gas Lighting Co., Davenport, Ia., to install in this city a gas lighting and fuel plant.

Odessa, Wash.—The Washington Water Power Co. will extend line to this place; franchise will be asked.

Charleston, W. Va.—An 18-in. pipe line, 83 miles long, costing a million and a half dollars, will soon be laid from the Roane County oil fields to Sugar Grove, O., by United Fuel and Gas Co.; work on the pipe line will be begun at once.

Elkins, W. Va.—The West Virginia Central Gas Co. will extend its pipe line from Beverly to Huttonsville, distance 11 miles, supplying Valley Bend, Mill Creek and other towns; cost \$25,000.

FIRE EQUIPMENT

South Manchester, Conn.—Oxford Hose Co. is considering purchase of chemical engine.

Washington, D. C.—Bids will be received August 11, 2 P.M., for furnishing Fire Department with one second-size Clapp & Jones fire engine.—H. B. Macfarland, Commissioner.

Milford, N. H.—City will install modern fire alarm system.

Brooklyn, N. Y.—City will erect a \$60,000 engine house on Smith st.

Mauch Chunk, Pa.—Diligent Hose Co. will purchase chemical engine.

Marshall, Tex.—City will install a fire-alarm system.

ELECTRIC RAILWAYS

Hartford, Conn.—Senate has passed 3 street railway resolutions; one was authorization of the construction of industrial railway in the East End freight yards to the Meadows; second gave the Connecticut Railway & Lighting Co. power to extend its lines along Stanley's lane, in Stratford, to Stratford ave. to Lordship Park; third allows for extension of time for 1 year for construction of a line between terminus of Barnum ave. line to Main st., Stratford.

Washington, D. C.—Thomas Blagden, Upper Saranac, N. Y., has suggested to Commissioners that Washington Railway & Electric Co. connect its two lines—the Mount Pleasant and the Brightwood—by a crosstown line.

Waterloo, Ia.—Council has received a petition from the Iowa Light & Traction Co. for a franchise in connection with the proposed interurban road between Des Moines and this city.

Fremont, O.—The Lake Shore Electric Railway Co. is asking Council for a new franchise for the use of the city's streets for a period of 25 years.

Tulsa, Okla.—Citizens have voted franchise to the Oklahoma Union Traction Co. to lay tracks on certain streets.

Portland, Ore.—Council is considering proposition forcing the local railway company to place fenders on its cars.

Memphis, Tenn.—The Clarksdale, Covington and Collierville Co. met to discuss the advisability of bond issue for construction of proposed interurban lines.

Quanah, Tex.—City has received a proposition from Hillsboro capitalists to build an electric line from Quanah to Medicine Mound.

BRIDGES

Topeka, Kan.—Plans are being drawn by the city Engineering Department for a bridge to be erected on Fillmore st., in the Quinton Heights district.

Monroe, Mich.—City Engineer I. W. White, Bair building, has prepared plans for bridge over Rasin River.—L. J. Humes, Clerk.

Lake Minnetonka, Minn.—Bids will soon be received by Hennepin County for construction of \$40,000 bridge.—F. E. Haycock, County Engineer.

Omaha, Neb.—City will erect viaduct over tracks on Omaha Belt Line at 46th and Dodge sts.

Carlisle, Pa.—County Commissioners have selected C. A. Bingham to prepare plans for 142-ft. reinforced concrete bridge.

BIDS RECEIVED

Harrisburg, Pa.—Of the eight bidders who submitted bids for the 17th st. bridge over

the Reading Railway tracks, only the figures of Stucker Bros.' Construction Co. came within the appropriation of \$20,000, and the award will be made to that company; Stuckers bid \$19,940. The other bidders and their bids follow:

Central Construction Co., \$22,829.25; Ferro Concrete Co., \$22,950; York Bridge Co., York, \$24,300; W. O. Weaver & Son, \$20,976; R. R. Ferno, \$22,369; Nelson-Merydith Co., Chambersburg, \$22,506; McCormick Co., Philadelphia, \$20,900.

MISCELLANEOUS

Washington, D. C.—Col. Cosby, engineer officer, has estimated that nearly \$400,000 will be needed for improvements to parks, as follows: \$50,000 for Potomac Park roadways, \$5,000 for park watchmen's lodges, \$25,000 for grading Henry Park, \$5,000 for oiling macadam roads, \$3,500 for Executive Mansion roads, \$83,000 for the balance of the Grant Memorial, \$4,000 for small reservations and \$3,000 for children's playgrounds.

Jacksonville, Fla.—County Commissioners have sold \$19,000 improvement bonds to Wooden, McNear & Moore, of Chicago.

Boston, Mass.—Bids are being received by Chief Engineer Miller, of the Charles River Basin Commission, for the excavation on the Charles River, between the Galen st. bridge, Watertown, and the dam just above, and also for a distance below.

New York, N. Y.—Plans have been filed for remodeling a 2-story lock-up of City Island Police Squad, at corner of City Island ave. and Orchard st., installing an up-to-date equipment; improvements will cost \$6,500.

Cincinnati, O.—Ordinance providing for \$1,000,000 issue of park bonds has been prepared by Assistant City Solicitor Morrill, and will be presented to Council; should Council refuse to authorize issue, Park Commissioners will call for a special election by people.

Portland, Ore.—Police Committee has recommended erection of central police station and municipal court building at Park and Everett sts.

Brady, Tex.—Commissioners' Court has decided to erect jail by levying tax.

PERSONALS

ADAMS, JOHN R., Mayor of Delphos, Kan., died July 27.

BASSETT, RUFUS W., Police Commissioner of Fall River, Mass., died July 26.

BERGEN, FRANCIS P., San Francisco, Cal., of Williams & Bergen, advisory engineers to the Civic League, has returned from an extensive trip in the East, where he investigated the existing high pressure fire protection system, as well as inspected machinery and material being manufactured for San Francisco.

BLAKE, EDWIN M., Richfield, Idaho, has resigned his position as manager of the Idaho Irrigation Company, Ltd., with headquarters at Richfield, and has opened an office as consulting engineer in the Overland Building, Boise, Idaho, where he will direct his attention to the design, construction, organization and management of engineering projects, particularly water works, power plants and irrigation.

BORDEN, COL. N. B., Fernandina, Fla., has been elected Mayor by the unanimous vote of the Council.

BROWN, GEORGE H., Mayor of Lowell, Mass., is a tentative candidate for the Republican gubernatorial nomination in 1911, according to his own statement. Mayor Brown was a patrolman on the Lowell force a year ago, and since assuming the Mayoralty has ousted the Police Commission under which he served.

CAMERON, JAMES, Assistant Chief of the Fire Department of Aberdeen, S. D., has severed his connection with the department following a dispute of authority with Chief Carter; he had been a member of the department for nearly twelve years.

CAMPBELL, N. DEMAREST, Assistant Chief of the Fire Department of Hackensack, N. J., for ten years, has been elected Chief of the Department over E. L. Brykczynski.

CASEY, MISS THERESA G., Secretary to President Polk, of the Civil Service Commission of New York City, has been made Executive Clerk of the Police Department of the city at \$3,000 a year by Commissioner Baker, Gen. Bingham's successor.

CHARLTON, R. A., Demopolis, Ala., Chief of the Fire Department, died July 21.

COTTER, JOHN F., Chief of the Fire Department of Newburyport, Mass., has requested the resignations of Alderman C. E. Corbin, a member of Hose Company No. 7, and Alderman G. P. Peckem, of Truck Company No. 1, as the City Solicitor has decided that the Aldermen cannot hold two positions under the city government.

CUTTS, F. T., assistant engineer of the St. Louis Water Supply Company, St. Louis, Mo., has recently made a trip to San Antonio, Tex., to investigate the water supply.

DEAN, CHARLES L., former Mayor of Malden, Mass., for six years, and State Senator for four years, died July 29, aged 65 years.

ECKHART, LOUIS V., Chief of Police of Davenport, Ia., since 1907, has been dismissed by Mayor McCaskrin, who announces that he will take personal charge of the department as he did two years ago.

FAYMONVILLE, BERNARD, President of the Board of Fire Commissioners of San Francisco, Cal., has tendered his resignation to Mayor Taylor on account of ill health and pressure of private business.

FULLER, S. J., City Electrician of Grafton, N. D., has resigned to take effect September 20 in order to accept a position as instructor in the Department of Mechanical Design at Cornell University at Ithaca, N. Y.

GARRETT, HENRY, superintendent of the Fire Alarm System, Dallas, Tex., has also been appointed Superintendent of the Police Alarm.

GEARHART, W. S., Assoc. M. Am. Soc. C. E., now with the Illinois Highway Commission, has been appointed Highway Engineer in charge of road and bridge improvement in Kansas; the work will be begun in September under the direction of the Kansas State Agricultural College, Manhattan, Kan.

GOAN, FRANK J., Chief of Police of Gloucester, N. J., has been dismissed by a vote of 6 to 3 by Council on charges preferred by Policeman William Lyons.

HENDRICK, CALVIN W., Baltimore, Md., Chief Engineer of the Sewerage Commission, left on a trip to Panama August 1.

HUFFEY, J. J., Texarkana, Ark., has been appointed Joint Fire Chief of Texarkana, Ark., and Texarkana, Tex. Under the new arrangements the fire company of each city will retain its present Chief, but both will be under the control of the Joint Fire Chief.

KAIN, PAT, Cass Lake, Minn., has been elected Chief of the Fire Department, and Dan Lilley as First, and Clayton Henricson as Second Assistant Fire Chiefs.

KIRBY, CHAS. W., New York City, has been named as Second Deputy Commissioner of the Police Department by Police Commissioner Baker, succeeding Frederick H. Bugher, who held the position under Commissioner Bingham and has since been appointed First Deputy Commissioner.

LINDNER, H., has been elected Chief Burgess of the newly-created Borough of Ringtown, Schuylkill County, Pa.

LITTLE, CHARLES, Chief of the Fire Department of Rochester, N. Y., celebrated his thirty-sixth anniversary as a member

of the department on July 15th; he was made Chief April 1, 1903.

LOEHR, LEW, Walla Walla, Wash., has been elected City Surveyor, Harry Crampton Street Commissioner and Mike Davis re-elected as Marshal, while J. Elery Fales, whom Dr. E. E. Shaw defeated in the primaries for City Health Officer, was elected over Dr. Shaw.

LONG, R. A., Mayor of Elizabethton, Tenn., died July 27.

LOWERY, CAPT. WM. J., Boston, Mass., for the last six years in charge of Police Station 12, South Boston, died suddenly July 28 while on duty.

MAITLAND, WYLIE M., Assistant Borough Engineer of Warren, Pa., has resigned and Harry Wheelock has been chosen as his successor.

MECHAN, COL. JOHN, who had charge of part of the topographical surveys on the Croton watershed for the water supply of New York City about 25 years ago, died in Brewster, N. Y., on July 24. He was born in Ireland, and before coming to the United States had served in the Royal Engineers. During the Civil War he served in the engineer corps, being at different times under Generals Halleck, Sheridan and Porter.

MOODY, JOHN E., Missoula, Mont., has been elected Alderman to serve out the remainder of the term of Alderman Bayes, resigned.

MURPHY, JOHN, Virginia, Minn., has been named by Mayor Hawkinson for the five-year term on the new Police and Fire Commission under the new "Home Rule" charter; A. De Noble for four years, Alex Lund for three years, E. C. A. Johnson for two years and Dr. C. B. Lenout for one year.

MARKBREIT, LEOPOLD, Mayor of Cincinnati, died July 26 after a long illness. Vice-Mayor John Galvin succeeds to the office.

McLAUGHLIN, JAMES D., Bellefontaine, O., has been appointed Councilman-at-Large, to succeed S. C. isher.

PINER, DR. F. E., Denton, Tex., has been appointed City Health Officer under the new State law.

PORTER, PHILIP E., Annapolis, Md., has been appointed City Clerk, Winston C. Gott, Collector and Treasurer; Edward Burtis, Market Master; Dr. William S. Welch, Health Officer, and Charles Chery, Chief of Police.

SAXTON, CHARLES, Chief of Police of Bristol, Pa., has taken a vacation for the first time during his thirty-two years term of office.

SHIELDS, J. S., Civil Engineer of Natchez, Miss., died recently.

STEWART, JAMES, Beaumont, Tex., has been appointed Chief of Police.

WAGNER, FRANK J., Chief of the Fire Department of Washington, D. C., has been granted a leave of absence for two weeks. He will spend his holiday in Atlantic City, and shortly after his return will go to Grand Rapids, Mich., to attend the annual meeting of the International Association of Fire Engineers.

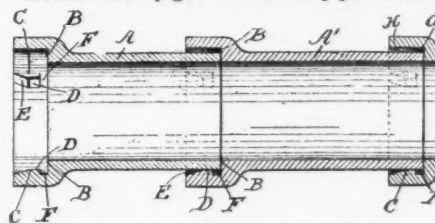
WALKER, WILLIAM H., New York, N. Y., has been reinstated in his old position, Superintendent of Public Buildings and Offices, by order of Supreme Court Justice Greenbaum. Walker was removed from office by Borough President J. F. Ahearn two years ago after charges were preferred against him by the Citizens' Union. He sued for reinstatement, alleging that he had not had a fair trial, that no charges had ever been formally made against him, and that his position fell within the exempt class of Civil Service.

WELLS, CARLTON H., Dallas, Tex., President of the Texas Bitulithic Company, died July 19.

PATENT CLAIMS

927,353. DRAIN OR SEWER PIPE. William L. Jackson, Brookland, D. C. Serial No. 482,284.

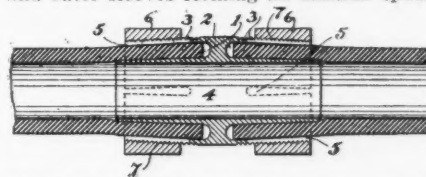
A pipe section having at one end a socket of greater diameter than the body part and formed with tapering lugs integral with the socket wall, provided with a pocket to retain a packing and cement around the spigot end of a pipe section,



and having inclined surfaces extending to the edge of the socket to enable a pipe section to be inserted into an adjacent socket and be guided by the inclined surfaces of the lugs into proper alignment and held against either vertical or lateral displacement, substantially as set forth.

927,388. HOSE-COUPLING. Evan Watkins, Cleveland, and John H. Miller, Elyria, Ohio. Serial No. 395,479.

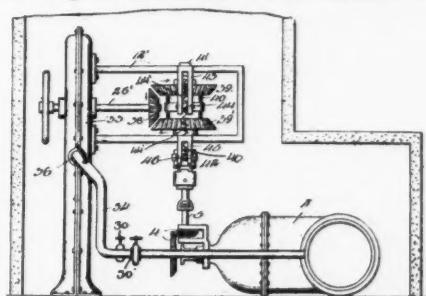
A hose coupling member comprising a body portion having integral inner and outer hose clamping sleeves, the inner sleeve having its outer surface tapered toward the free end, and the outer sleeve being cut or slotted inward from the free end and having an inner surface which is normally substantially cylindrical and an outer surface which is threaded, said inner and outer sleeves forming an annular space



which is adapted to receive the hose and is normally of greater width at the open or outer end than at the inner end, and a tapered clamping nut engaging the threads on the outer sleeve and serving when tightened to draw the sections of the latter inward so that the clamping surfaces of the two sleeves are substantially parallel and the sections of the outer sleeve bear against the hose with substantially uniform pressure throughout their hose-engaging length.

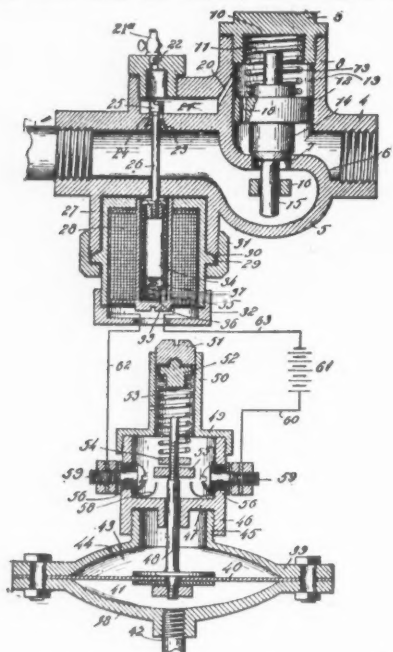
927,422. HYDRAULIC OPERATOR FOR GATE-VALVES. David P. Moore, Washington, D. C., assignor to himself and Carroll Beale, Washington, D. C., and Edwin A. Lerch, Baltimore, Md. Serial No. 454,515.

In combination with a water main, a valve casing mounted therein, a valve in said casing, operating mechanism for the valve, two pipes in communication with the water main at the respective sides of the valve casing and adapted to convey water from the main, a valve to control each of said pipes, and a single pipe into which said two pipes lead, of a single way rotating vertical water motor mounted to



one side of the valve casing and having its shaft projecting to one side thereof above, the valve operating mechanism, a frame connected to and carried by the motor casing upon the same side as the motor's shaft, a vertical shaft journaled in said frame, a clutch mounted in the frame and interposed between the motor's shaft and the vertical shaft, said clutch controlling the direction of rotation of the vertical shaft, means to operate said clutch, another clutch upon the lower end of the vertical shaft for operably connecting the valve operating mechanism with said vertical shaft, and means for controlling said last mentioned clutch.

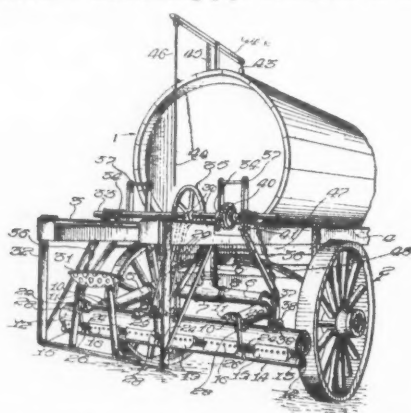
926,389. **ELECTRICALLY OPERATED VALVE.** George W. Collin, Bridgeport, Conn. Serial No. 359,031.
The combination with a casing having an inlet and an outlet, of a valve for



closing conduit, each through the casing, a piston carried thereon permitting a passage of fluid therepast, a supplemental valve, electrically operated means for seating the supplemental valve to stop the flow to seat the main valve.

927,315. **APPARATUS FOR SPREADING LIQUID ASPHALT.** Charles A. Baldwin, Los Angeles, Cal. Serial No. 408,325.

The combination with a truck, springs mounted on the truck and a heat insulating tank mounted on the springs, of a vertical feed-pipe leading downwardly from the tank; a tee at the lower end of the feed-pipe, branch feed-pipes extending transversely from the tee, elbows upon the outer ends of the branch feed-pipes, pipe-sections extending backwardly from the elbows, the joints between the pipe-sections and the tee being loose enough to allow the pipe-sections to swing up and down, a distributing-pipe connected to the



rear ends of the pipe-sections, a valve-shell connected to and parallel with the distributor-pipe and provided with outlets, there being a series of ports extending along and leading from the distributor-pipe into the valve-shell, a valve-tube rotatably mounted in the valve-shell and provided with a series of inlet and outlet ports arranged therealong so that by rotating the valve-tube the flow from the distributor-pipe through the valve tube is regulated, and so that when the valve-tube is set at any position to open the outlets the discharge through all of said outlets will be practically uniform as to volume and velocity.

928,606. **CONDUIT.** Willard Houghton, Brinnon, Wash. Serial No. 444,833.

A water conduit for use in roads, composed of a hulk or body formed with a plurality of ridges on its periphery, said conduit being adapted to be embedded in the road so as to extend transversely thereto, and to have one of its ridges project upwardly from the surface of the road.

INCORPORATIONS

Bogart Gas Power Engineering Co., Buffalo, N. Y.; manufacturing gas engines, gasoline engines, motors, electrical goods, etc.; capital, \$25,000. Incorporators: Solomon Ginsburg, 360 Linwood Avenue; James A. Venable, 327 Delaware Avenue, both of Buffalo; Bernard Ginsburg, 84 Adelaide street, Detroit, Mich., and others.

Bray & Lukens Company, Buffalo, N. Y.; manufacture sewer pipe, flue linings, wall coping, fire brick, cement and builders' supplies; capital, \$40,000. Incorporators: William F. Bray, Buffalo, N. Y.; J. Parry Lukens, Philadelphia, Pa.; Wallace, Thayer, Buffalo, N. Y.

Chattanooga Railway & Light Company, Chattanooga, Tenn.; capital, \$5,000,000. Incorporators: Foster V. Brown, J. C. Lightfoot, W. E. Boileau, Frank Spurlock, T. G. Newman, Joe Brown and M. J. Horan.

Clifton Electric Light & Power Company, Clifton, Tex.; capital, \$25,000. Incorporators are: J. H. Chambers, W. G. Scarff and A. A. Slaughter.

The Coeur d'Alene Current Motor Company, Coeur d'Alene, Idaho; to generate and distribute electrical energy for all purposes; capital, \$250,000. Incorporators: J. R. Novers, F. E. Wonnacott and Guy Searies.

The Cumberland County Light & Power Company, Portland, Me.; capital stock, \$300,000. Incorporators: C. E. Mitchell, Oakleigh Thorns, New York; Charles G. Flitts, Brattleboro, Vt.; George A. Goodwin, Newell T. Fogg, F. J. Allen, Sanford.

Cuyton Oil & Gas Company, Delaware Registration & Incorporation Company, Wilmington, Del.; capital, \$100,000. Incorporators: O. F. Cuyton, A. B. Marshall, E. T. Rose, all of Wilkinsburg, Pa.

C. M. Daniels Light Company, Paris, Ill.; manufacturers gasoline lamps; capital, \$4,000. Incorporators: Charles M. Daniels, Charles W. Bouser, Henry C. Albrecht, Paris, Ill.

Dixon-Smith Engineering Company, 818 Wright Bldg., St. Louis, Mo.; capital, \$15,000; has taken over business of Dixon & Smith, engineers. Incorporators: Will M. Dixon, President; Howard F. Smith, Secretary-Treasurer; James L. Longino, Vice-president.

W. F. Dryer Construction Co., New York; contracting, laying sidewalks, curbing, etc.; capital, \$5,000. Incorporators: William F. Dryer, 16 Court street, Brooklyn; Daniel G. McConnell, 302 Broadway, New York; Harry L. Decker, 16 Court street, Brooklyn.

East Moline-Silvis Lighting Company, East Moline, Ill.; operate light, heat, and power plants; capital, \$5,000. Incorporators: John A. O'Neil, Thos. J. Gorman, James L. Vernon, Moline, Ill.

Empire Brick Company, Olean, N. Y.; manufacture bricks and burned clay materials; capital, \$150,000. Incorporators: Henry Hasbrouck, F. L. Bartlett, H. S. Sartwell, all of Olean, N. Y.

Essex Concrete Construction Company, Salem, Mass.; general business of building and construction; capital, \$20,000. Incorporators: President, William L. Johnson; Vice-president, Benjamin C. Emmons; Treasurer, Ralph W. Prescott; clerk, John H. Shedy, all of Danvers.

C. H. Evans Engineering Company, Chicago, Ill.; engineering and contracting; capital, \$5,000. Incorporators: A. Bingham, 503 Ashland Block, Chicago, and others.

Farmington Falls Water Company, Farmington, Me.; supplying water; capital, \$5,000. President, A. P. Carvill; treasurer and clerk, E. A. Croswell, all of Farmington Falls.

Filter Rental and Supply Company, Rochester, N. Y.; water filters; capital, \$50,000. Incorporators: Jesse Van Baylis, 56 Manhattan Avenue; Michael J. McCarthy, 46 N. Fitzhugh street; Edward J. Wolfsohn, 84 Meigs street, all of Rochester.

Frontier Boiler Manufacturing Company, Buffalo, N. Y.; capital, \$100,000. Incorporators: Arthur B. Douglas, 42 Brickman St.; Patrick H. Murphy, 222 Elk St.; Henry A. Bittner, 169 Selkirk St., Buffalo, N. Y.

Gilboa Electric Light, Heat & Power Co., Gilboa, N. Y.; electric light, heat and power; capital, \$25,000. Incorporators: Ernest E. Billings, Eli S. Persons, Sidney Rivenberg, all of Gilboa, N. Y.

Globe Air Lift Pump Co., New York, N. Y.; manufacture air lift pumps, motors, etc.; capital, \$500,000. Incorporators: J. A. Rose, William Whelpley, New York; Frank E. Griffin, Albany, N. Y.

Haeefe Lamp Company, Rogers, Ark.; to establish plant to manufacture Haeefe electric power lamp. Incorporators: R. S. Willie, President; R. C. Alexander, Vice-president; John Nutt, Secretary; J. E. Felker, Treasurer.

Highway Metal Culvert Company, Kittery, Me.; metal road culverts; capital, \$10,000. President and Clerk, R. Mitchell, Kittery.

Hillsboro Water, Light & Power Company, Hillsboro, Ore.; capital stock, \$40,000. Incorporators: A. John Stephenson, Charles E. Lyle, and W. G. Hare.

Hornell-Bath Interurban Railway Co., Hornell, N. Y.; street railroad; capital, \$250,000. Incorporators: Charles Adsl, L. W. Rockwell, J. B. Woodbury, Hornell, N. Y.

Hub Construction Company, Oklahoma City, Okla.; capital, \$950,000. Incorporators: W. J. Morris, T. S. Chamberlain, Jr., J. L. Ladd and others.

Ideal Carriage Washer & Automatic Water Saver Company, Rochester, N. Y.; to manufacture carriage washers, drinking fountains, troughs for horses, automatic water savers; capital, \$20,000. Incorporators: Edwin P. Gaylord and Ernest L. Cables, Rochester; William J. Stephens, Titusville, Pa.

Indiana Automatic Gas Machine Company has been organized at Indianapolis, Ind., with \$75,000 capital stock; to manufacture heating and lighting apparatus. The Incorporators are August M. Kuhn, John W. Kern and Charles Pegman, of Indianapolis, and Jerome Herff, of Peru, Ind.

The Illinois Lakes Light & Power Company, Chicago, Ill.; capital, \$2,500; to operate a light, heating and power plant. Incorporators: Thomas H. Robinson, L. W. Bestel, L. F. Mason, and G. A. Ellingson, Chicago, Ill.

M. & C. Little Valley Gas & Oil Company, Little Valley, N. Y.; mine and supply oil, gas, and petroleum; capital, \$5,000. Incorporators: Wilson Milks, Jean Case, Fred Milks, all of Little Valley, N. Y.

MacCracken-Hauer-Terry Co., New York, N. Y.; manufacture power and excavating machinery, etc.; capital, \$15,000. Incorporators: George C. MacCracken, 50 Church street; Daniel J. Hauer, C. Raymond Hauer, both of 21 Park row; O. F. Terry, 50 Church street, all of New York.

Massachusetts Concrete Co., Boston, Mass.; manufacturing and sale of concrete; capital, \$25,000. Incorporators: President, Edward E. McGanty, 24 Antrim street, Cambridge; treasurer and clerk, Morris Steinmetz, 51 Brookline street, Cambridge; attorney, Josiah Bon, Pemberton Building, Boston.

Municipal Filtration Company of New England, Boston, Mass.; manufacturing, sale and dealing in filters of all kinds. Incorporators: President, Allen Lowe, 507 Old South Building; treasurer, Edgar B. Fraser, 43 Tremont street; clerk and attorney, William H. Dietzman, 18 Tremont street, all of Boston.

W. Q. O'Neill Company, Crawfordville, Ind.; to manufacture corrugated road culverts; capital, \$50,000. Directors: W. Q. O'Neill, W. H. O'Neill and G. T. Durham.

O'Rourke-Magner Quarrying Co., Salem, Mass.; quarrying marble; capital, \$30,000. President, Matthew J. Manger, 14 Cousins street, Salem; treasurer and clerk, Michael J. O'Rourke, 7 Lynn street, Salem; attorney, M. J. Reardon, 252 Essex street, Salem.

Oswegatchie Hydraulic Power Co., Carthage, N. Y.; manufacture and sell electricity, but not for public purposes; capital, \$100,000. Incorporators: Mark S. Wilder, May C. Wilder, Frank P. Wilder, all of Carthage, N. Y.

Rauscher Construction Co., Syracuse, N. Y.; construct buildings, roads, bridges, etc.; capital, \$500. Incorporators: Albert Rauscher, Arthur B. Haley, William B. Smith, all of Syracuse, N. Y.

Schoellkoff Construction Co., Buffalo, N. Y.; general contractors; build and wreck houses, pave streets, etc.; capital, \$25,000. Incorporators: Walter H. Schoellkoff, Edgar O. Van Houten, Jr., Carl D. Stephan, Buffalo.

Sterling Brick Co., Olean, N. Y.; manufacture brick and burned clay materials; capital, \$10,000. Incorporators: Henry Hasbrouck, F. L. Bartlett, H. S. Sartwell, C. R. Bard, all of Olean, N. Y.

The Trainer Contracting Co., New York, N. Y.; trucking, contracting stevedore; capital, \$5,000. Incorporators: William H. Trainer, 2909 Ocean Parkway; William M. Trainer, 45 Buckingham road; Sarah L. Lalor, 290 Ocean Parkway, all of Brooklyn.

Twin Falls Oakley Land & Water Company, Wilmington, Del.; capital, \$250,000. Incorporators: S. E. Roberson, F. M. Shive, Harry W. Davis, Wilmington.

The Western States Engineering Company, Wilmington, Del.; Delaware Trust Company; capital, \$300,000. Incorporators: John F. McDermott, J. William Taylor, Luke Whitson, all of St. Louis, Mo.

TRADE NOTES

Cast-Iron Pipe.—Chicago: Several good municipal orders have been closed. Quotations: 4-inch, \$27.50; 6 to 12-inch, \$26.50; 16-inch and up, \$25.50. Birmingham: It is believed that many extensions of municipal supplies that have been deferred will soon be under way. Quotations: 4 to 6-inch, \$26; 8 to 12-inch, \$25; over 12-inch, average, \$24. New York: Competition for business is still sharp, and prices have not advanced, notwithstanding the higher cost of material. Quotations: 6-inch, car load lots, \$23 to \$23.50.

Lead.—Sales have been reported during the week at 4.30c., but the big sellers continue to agree on 4.35c., and they are holding firm until the odd lots that are being offered are disposed of. In St. Louis the same condition prevails, and lead has been quoted there as low as 4.15c., although the general opinion seems to be that 4.20c. is the average price. Buyers are scarce both here and in the West, and any notable buying movement would quickly dispose of all the resale lead in sight.

Stand Pipes and Tanks.—The Des Moines Bridge and Iron Company, of Des Moines, Ia., makes a specialty of bridges and water towers. Most of the latter constructed by this firm have had the hemispherical bottom, except in the case of wooden tanks supported on steel towers. They publish a catalogue well illustrated with examples of their construction, which also contains considerable information for water works men. A brief description is given of a compressed air water works plant constructed by this company.

Sluice Gates.—The Chapman Valve Manufacturing Company, of Indian Orchard, Mass., has standardized the manufacture of its sluice gates. Cast-iron is used for the gate frame, plug and guides, bronze for the adjusting wedges, screws, lock nuts and spindle nut, and for the spindle in the case of inside screw gates. The bearing surfaces between the frame and the plug are always made of bronze, finished to form a water-tight joint. Adjusting wedges are provided which can be adjusted in a very few moments, by the use of an ordinary wrench, to take up all wear. The larger gates are arranged to be operated hydraulically or by electric motor. A catalogue recently issued gives the dimensions of all parts of their standard sluice gates.

Crude Oil Engine.—A new crude oil engine, invented by William F. Miller, is being manufactured by the Springfield Crude Oil Engine Company, of Springfield, Mass. This company has bought a large tract of land on the line of the Boston and Albany Railway and will erect a factory there. The engine uses crude oil for fuel, the same oil being used for lubricating the cylinder. It is claimed that the spark plugs remain perfectly clean and that far less evidence of carbonization can be found than in any gasoline engine.

Asphalt Plant.—A \$30,000 asphalt refining plant is about to be placed in operation at Prichards Station, near Mobile, Ala., by the T. F. Conway Asphalt Paving Company, of Chicago, Ill. The plant represents an investment of about \$30,000, and is the result of the company discovering that it can save \$50,000 per year on freight shipments by refining the asphalt in the South. The plant is a large one, and, it is said, will care for all the paving work of the company, one of the largest in the country.

Westinghouse Company's Report.

The Westinghouse Electric and Manufacturing Company issued a report for the year ended March 31, 1909, which includes the operations of all its subsidiaries. While the statements of George Westinghouse, the president of the company, are encouraging as far as the future prospects of the business are concerned, he shows, nevertheless, that the affairs of the company have been in a very unsatisfactory condition since the outbreak of the recent panic. The outlook and inquiries, however, indicate that in the near future the full capacity of the works will be required to meet the demand. During the year covered by this report the company and its subsidiaries turned out manufactured goods invoiced at \$20,606,592, the factory cost of which was \$19,955,808, leaving a manufacturing profit of only \$650,784. It is stated business cannot be done on such a narrow margin, only a trifle over 3 per cent, when gross profits should be ten times that amount; and when other necessary deductions were made there was a net deficit from operations of \$918,683. The net surplus of March 31, 1908, of \$11,972,997 was cut down to \$8,980,335, and this decrease of \$2,992,662 was made up of the loss from operations of \$918,683 already noted, expenses amounting to \$460,490 connected with the readjustment of the debt, \$265,883 for receivers and attorneys' fees and allowances for depreciation of assets and plant amounting to \$1,347,605. The report states that the loss is chiefly accounted for by a small volume of business, the utilization of high-priced material, by sales at reduced prices, and by very considerable extra expenses incurred in completing the departmentalizing of the manufacturing operations of the company and in the rearranging of the machinery, which work was carried on without interruption by the receivers. The results of these important changes in manufacturing methods have been to greatly reduce the amount of material, raw, in process and finished. The amount of material in stock, work in progress, goods on consignment and apparatus with customers on March 31, 1909, was \$9,061,182, as compared with \$17,740,178 on October 23, 1907, when the receivers were appointed.

Municipal Electric Plant.—Muralt & Co., engineers, of New York City, have been awarded the contract at Berlin, Md., for furnishing and installing the electrical equipment of the new municipal lighting and pumping plant. Power will be generated and transmitted throughout the city by means of a 2,200 volt, two-phase alternating current system. The alternators will be of the belted type, and will be driven by gas engines supplied by producer gas. Stepdown transformers reducing the line potential to 110 volts will be provided at the centers of distribution to feed the city lighting circuits.

Profit-Sharing.—Employees of the Milwaukee, Wis., Gas Light Company in every grade were made happy by the receipt of the semi-annual profit-sharing dividend on their wages for the last six months. The only condition which attached to the payment of the dividend was that employees should have been in the company's service for a year and regularly employed during the period for which the bonus was given. The Milwaukee Gas and Light Company has shared its profits with employees on a 10 per cent basis for several years with satisfactory results to all concerned.

Continental Fire Engine Test.—The new Continental fire engine, purchased from the Ahrens Fire Engine Co., by Columbus, O., has been given a test by the Fire Department. The new engine was purchased for the new wholesale district house, No. 16, on Fourth street, at the head of Chestnut street. The engine is the largest in the city, with a guaranteed pumping capacity of 1,100 gallons of water per minute. The engine at the headquarters house has a similar capacity, but its boiler is smaller than that of the new engine and it does not maintain the average. The new engine, on its test, pumped considerably more than its guaranteed capacity, and is expected to maintain this on an average. The one engine pumped at one single time four single lines of hose, each throwing a 1-inch stream 175 feet, and it threw a 2-inch stream higher than the Capital Trust building. It cost \$6,625, while Springfield, O., has just paid \$7,410 for an auto engine.

Auto-Combination Wagon.—The Pope-Hartford Company, Hartford, Conn., has delivered to the town of Westfield, Mass., a combination wagon for the use of the Fire Department. The new wagon has a wheel base of 120 inches, and the engine develops 40 horse-power. The tires are 34 by 5 inches. The transmission is of the selective type, with three speeds forward and reverse. The brakes are ample, with two sets operating by pedal and hand lever on each rear wheel and on transmission shaft. The wagon is capable of a speed of 40 miles an hour, if required. A full set of tools goes with the wagon. The lighting is with acetylene. There are two headlights and one large searchlight and two small side lights for oil. The wagon is splendidly equipped with a 40-gallon chemical tank just back of the driver's seat. In the rear overhead is the metal hose basket for carrying the chemical hose. The body has a capacity for 1,000 feet of 2½-inch fire hose. On the side of the wagon is a scaling ladder, two hand chemical extinguishers, two pickhead fire axes, four lanterns, a door jimmy and a 13-inch gong.

Reversible Turbine Engine.—A reversible turbine engine has been invented by H. A. Buck, of Hammond, Ind., and the chief exploiters are W. W. McMahon and Joseph Conroy, also of Hammond. Others in the company are Frank Shine, John Young, Attorneys Henderson and Grove, R. E. Woods, John Beckman, A. J. Swanson, L. E. Barnes and W. W. Edwards. The members of the Hammond syndicate expect Mr. McMahon, who is now in Berlin, to close a deal shortly by which German capitalists will purchase, on an option which they obtained some time ago, the rights to the European patents on this engine for \$70,000. Two-fifths of this amount will go to the Hammond promoters. Joseph Conroy has also obtained control of the American patent from Charles Wainwright, of Boston, and, together with the latter, will soon begin exploiting the American end of the deal. Mr. McMahon and the inventor, H. A. Buck, have been in Berlin and other cities in Germany for the last three months making the necessary tests of the turbine before German engineers and capitalists. The ordinary steam turbine has been found far superior to the reciprocating engine of a few years ago; but it has been possible to use them to a limited extent only, owing to the fact that heretofore it has been impossible to produce a reversible turbine.

Automobiles and Fire Engines.—The Seneca Falls Engine and Supply Company is the name of a new industry which will within a few weeks be located at Seneca Falls, N. Y., and will be operated by purely local interests. The company will make a business of repairing fire engines and will also take in job work, repairing other types of engines and automobiles. A building has been leased near the button shop.

McCalls Ferry Power Company.—This company, which was erecting a plant to generate 100,000 horsepower for furnishing current to Philadelphia, Baltimore and intervening towns, has gone into the hands of a receiver. The Knickerbocker Trust Company holds a \$10,000,000 mortgage on the property, and the company had defaulted in payment of interest on this. Attachments have also been placed for the salary of the chief engineer. The suit for appointment of receiver is said to be a friendly one. Practically no work has been done since October, 1907, upon the large concrete dam, 60 feet high and 2,500 feet long, over the Susquehanna River, which was being constructed by this company.

Power Project.—Details of a big electric power project in which W. P. Hammon, gold dredge operator, is heavily concerned, show that he has acquired for himself and associates power systems and water rights in California and Nevada, and it is estimated that the total purchase price is \$3,000,000. At least \$2,000,000 additional will be spent this year on developing the properties. A holding company to be known as the Lake Tahoe Water and Power Company has been formed to take over the companies bought. The combined properties, fully developed, will generate between 75,000 and 200,000 horsepower, and it is stated that the electric power will be distributed in western Nevada, eastern California, the Sacramento Valley and the Bay section. The companies purchased are as follows: Truckee General Electric Company, with four power plants on the Truckee River between Truckee and Reno; Reno Power, Light and Water Company, which furnishes the towns of Reno and Sparks with gas, water and electric light and power; Union Light and Water Company, a holding and operating concern in the same vicinity as the two preceding; Washoe Power and Development Company; Washoe Deep Well Company; Hunter Creek Water Company; California-Nevada Electric Power Company, with plants on the Carson and Walker Rivers, in Nevada; Loon Lake Water and Power Company, in Eldorado County, Cal., and capable of developing from the Rubicon River between 50,000 and 60,000 horsepower.

Power Project.—The Walker River Electric Power Company, headed by George P. Costigan and Dr. A. L. Polard, of Denver, Col., has achieved the last important step toward realizing the intent of its incorporation. In exchange for \$75,000 cash it has secured from J. P. Conaty, of Sweetwater, Nev., deeds to his water rights and certain lands lying in Esmeralda County. With the expenditures of upward of \$750,000 the company will erect a power plant to supply the mine operators and others at Sweetwater east to Hawthorne and Lucky Boy, south to Tonopah, west to Aurora and Bodie, Cal., and north to Masonic. The East Walker River, from which the power will be generated has a flow of 6,000 cubic inches per second during the driest season.

Water Company to Be Sold.—Federal Judge Waddill, at Norfolk, Va., directed the sale, after proper notice, of the Peninsula Pure Water and National Water Supply properties and franchises in the city of Hampton, the town of Phoebus, National Soldiers' Home and the counties of Elizabeth City, Warwick and York, Virginia. The sale is made to satisfy a \$300,000 bond issue by the Peninsula company and a \$250,000 issue by the National company with the Knickerbocker Trust Company of New York, trustees under each.

Water Company Bankrupt.—Elbward S. Sutton, who owns a water company at Van Buren, Grant County, Ind., has asked to be declared a bankrupt. The water business does not seem to have picked up when the saloons were boosted out of the county, and Sutton now values his franchise and his water plant, and a sprinkling wagon thrown in, at only \$550. There is real estate which raises his total assets up to \$2,355, but the liabilities are enough to drown even a well-watered water plant, they aggregating \$5,745. Incidentally, while supplying Van Buren with water, Sutton also ran a flour, feed and coal yard.

Boiler Agencies.—The Mosher Water Tube Boiler Company, 50 Church street, New York City, has sent its vice-president, A. E. Aeby, to the Pacific Coast for the purpose of establishing agencies throughout that territory.

Sewer Pipe.—The Blackmer & Post Pipe Company, of St. Louis, Mo., is now making 42-inch vitrified sewer pipe in commercial quantities. The company claims to be the only concern in the country that can put out this size.

MUNICIPAL APPLIANCES

Improved Cover for Clark Meter Box

H. W. CLARK COMPANY, 115 South Seventeenth street, Mattoon, Ill., has placed on the market an improved combination temporary cover with ring form for use in connection with the "Clark meter box" for settings in concrete or asphalt sidewalks or pavements, composed of two sections. The temporary cover (Fig. 1) to be placed on meter box body after same has been brought to proper grade, and the ring form (Fig. 2) for molding the concrete blocks to fill opening left by the temporary cover.



FIG. 1



FIG. 2

The sidewalk contractor finishes the walk up to and around the temporary cover, which is left in place until the Water Department desires to place regular cover and lid. The temporary cover is made heavy enough to withstand all traffic, and as the top of same is level with the surface, it can be left in place indefinitely. To remove the temporary cover, screw eyelet, with ring attached, into threaded hole in center and pass a bar of 2-inch pipe or round iron through ring, placing a brick or wooden block on side for fulcrum, and lift straight up. Edges of casting may be tapped lightly with a hammer to loosen while lifting.

The concrete block over the regular "Clark meter box" cover and lid is molded as follows: The cover is placed

in the ring form (Fig. 2); concrete filled in around same and allowed to stand until thoroughly set; then cover with concrete block is removed, another cover placed and process continued as before.

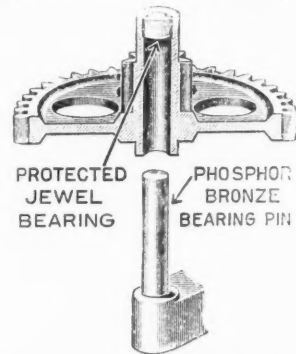
With one ring form there can be made up any quantity of these concrete blocks.

These forms are made true to pattern, thereby insuring perfect uniformity and fit.

By this method of setting, it is claimed, there is had a systematic installation, with all the advantages of the large box body and the small opening of the lid, with the secure and quickly operated locking device of the "Clark meter box."

Water Meter with Improved Bearing

An important improvement, tending to greater accuracy and durability in water meters, has been introduced in New Niagara and American meters. It consists of a jewel-bearing intermediate gear train, whereby friction and wear among the meter works is reduced, and



thus the precision and life of the meter prolonged.

The illustration shows how the gear is carried by the jewel revolving on the upper end of a pivot, the point of contact as well as the entire bearing being thoroughly protected from dirt and the cutting which results therefrom. The gears and bearings are simple and strong. Upon opening the meter casing at the bolted flange, each intermediate



gear may be immediately removed from its bearing, which greatly facilitates inspection and cleaning.

Niagara and American meters have had an established reputation for many years as one of the most successful water meters, and this improvement indicates the ambition of the makers to excel. The Buffalo Meter Company, 290 Terrace, Buffalo, N. Y., will furnish further particulars to those who may desire them.

Chemical Fire Engine

THE Kanawha Chemical Fire Engine Manufacturing Company, No. 88 Cortlandt street, New York, N. Y., manufactures a chemical fire engine for the use of Fire Departments. The apparatus is mounted on a four-wheel truck having a step in the rear for the firemen to stand on, a basket underneath for miscellaneous equipment, two ladders and a basket of sufficient capacity to carry a number of lengths of chemical fire hose. The chemicals are discharged from a storage tank of 75 gallons capacity by means of air compressed under a pressure of 1,000 pounds to the square inch. The air is stored in a separate cylinder, which is charged by a small engine and special pump located in the station house. Extra cylinders may be carried, and the operation of changing cylinders is simple and can be quickly performed. The air from the pressure cylinder passes through a pressure-reducing valve on the chemical cylinder, where it is reduced ordinarily to a good working pressure of from 90 to 125 pounds. The discharge of the chemical stream can be stopped at any time, and the remainder of the charge used without cleaning out and refilling. In practice the apparatus has been used at three successive fires without changing cylinders. The air cylinder is guaranteed safe up to a hydrostatic pressure of 3,000 pounds to the square inch. The chemical cylinder will safely stand a pressure of 350 pounds per square inch.

The manufacturers claim superiority to the ordinary chemical fire apparatus where sodium bicarbonate and sulphuric acid are used in the following particulars:

The chemical used is a preparation containing no acid and is not injurious to flesh or fabric.

A higher average pressure is maintained on the chemical solution than in the case of acid and soda machines, therefore the distance to which the stream may be carried is greater.

The air cylinders can be changed quicker than a soda and acid tank can be charged.

The full efficiency of the chemicals is utilized, whereas in the case of soda and acid apparatus some of the soda is converted into inert sodium sulphate before using.

The apparatus may be used to discharge plain water, should no chemical be at hand.

The apparatus may be used without recharging when the air cylinder is only partially exhausted.

The air valves do not leak.

Log-Log Duplex Slide Rules

THE Keuffel & Esser Company, 127 Fulton street, New York, has placed on the market a Log-Log Duplex Slide Rule, which is especially devised for the solution of examples and formulas involving fractional powers and roots, as well as natural or hyperbolic logarithms. In addition to the Log-Log Scale, all the ordinary logarithmic and trigonometrical scales are on the Log-Log Duplex Slide Rules, and these rules are therefore capable of performing a practically unlimited range of problems. They are made in two sizes. The smaller rule does not have the D scale on both sides, but otherwise embodies all the novel features of the larger rule. The Log-Log Scale, as its name indicates, represents the logarithms of the logarithms of a series of natural numbers, so that while the C D scales give the logarithmic location of the natural numbers read on them, the Log-Log scale gives the corresponding Log-Log location. The value of such an arrangement is best appreciated in involution and evolution, where the root or the power is taken on the Log-Log scale, while the exponent or root index is taken on the C scale, proceeding as in ordinary multiplication for involution, and is in division for evolution. The logarithmic scale may be set in any additive or subtractive relation to the Log-Log scale, and the desired result obtained by a single operation. The Log-Log scale is graduated in three sections, which, if placed end to end, would form a continuous scale from lower to upper limit. It may be arranged in any chosen relation to the other fixed scales on the rule—that is, any portion of the Log-Log scale may be graduated in alignment with the other indexes, inasmuch as the slide can be set to it as desired, the coinciding point selected determining the lower and upper limits of the scale. The arrangement of the tangent scale between the C and CI scales makes it possible to read the tangent or cotangent of any angle between $5^{\circ} 43'$ and $84^{\circ} 17'$ without setting the slide. Tangents of angles between $5^{\circ} 43'$ and 45° , and cotangents between 45° and $84^{\circ} 17'$ are read on C, while tangents from 45° to $80^{\circ} 17'$ and cotangents from $5^{\circ} 43'$ to 45° are read on CI by using the complement of the angle. These functions may also be used in direct computations by noting that any function read on the inverted scale must be subtracted if multiplying, or added if dividing, as the inverted scale reverses the operations.

As the sines and tangents of small angles do not differ materially, the tangents and cotangents below $5^{\circ} 43'$ and above $84^{\circ} 17'$ may be determined from the sine scale, and thus the entire range of regular trigonometric functions may be handled. It is to be noted that the sine scale gives values down to about $35'$ and that for sines or tangents of any number of minutes or seconds less than $35'$, the "minute" or "second" gauge marks are set to the desired number of minutes or seconds on A, and the required value read on A over the index of the sine scale. In order to determine the decimal point of values so obtained, it should be remembered that sine $1''$ is about .000005, and sine $1'$ is about .0003.

Automobile Patrol

THE Studebaker Automobile Company, Cleveland, O., manufactures an electric auto patrol wagon having an ordinary capacity for ten men. The teamster's rating is 1,500 pounds, but it is designed to give good service with overloads of 100 per cent, assuming that the average load year in and out will not exceed the rating. The specifications are as follows:

Specifications—1,500-Pound Capacity

Maximum speed, on level hard roads with average load of two-thirds rated capacity	12 miles per hour
Gauge	56 inches
Wheel Base	91 inches
Tires	{ Front 36 x 3 inches Rear 42 x 3 inches
Dimensions of clear carrying space	{ Length 82½ inches Width 39 inches Height 55½ inches

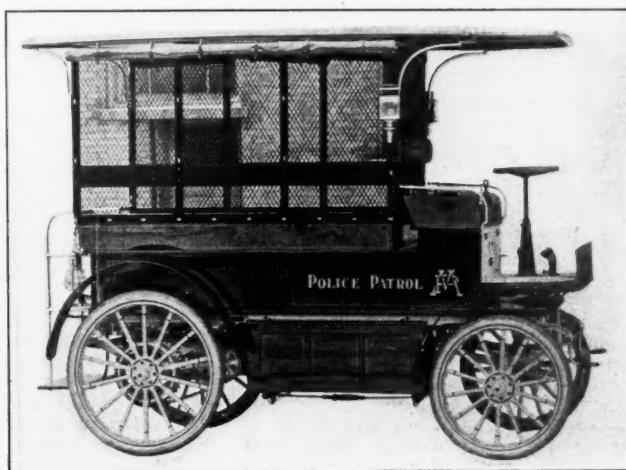
Equipment

One charging plug and cable with a full complement of tools and ample reserve supply of spare parts, one tail lamp, two side lamps and bell.

The argument in favor of the electric, as compared with the gasoline-driven vehicle, is this: "In general, within the convenient radius of action of the electric, it is the more economical of the two, except for the smallest possible installations of one or two vehicles, and even then it is the more economical in many instances. The greatest economy is attained when the number of electrics operated from one station are near the maximum of the capacity of one expert electrical overseer. Experience indicates that, as a general rule, the maintenance of electric delivery wagon stations is conspicuously less than that of the gasoline stations, unit for unit, from a number of ten units and upwards."



KANAWHA CHEMICAL FIRE ENGINE



STUDEBAKER ELECTRIC PATROL

BOOK REVIEWS

Typhoid Fever, Its Causation, Transmission and Prevention. By Geo. C. Whipple. 8 vo. 400 pages. Cloth. New York: John Wiley & Sons. Price, \$3, net.

The object of this book is to furnish to physicians and sanitary engineers "a condensed summary of the most important facts that have been learned regarding typhoid fever, so far as they relate to the prevention and spread of the disease; to furnish to the student of sanitary science a group of illustrations of some of the leading principles of epidemiology and to give to the general reader a simple and, it is hoped, a clear and correct account of the causation, transmission and prevention of the disease, and his own responsibility in helping to bring about such conditions of cleanliness that typhoid fever shall soon cease to be a national disgrace." The aim of the author as expressed in this statement has been exceedingly well carried out. The statements in the book have been drawn from recognized authorities, and while one or two of the illustrations cited have been worn threadbare during the past ten years, the majority of those described at greater or less length have occurred during the past five or ten years and have been studied and reported upon by eminent sanitarians in the light of the most recent knowledge. Although the book is by no means a popular one, merely skimming the surface of the

subject and presenting only the most striking and impressive facts and figures, on the other hand it goes quite thoroughly into the subject which it covers and is written in a style and with an absence of unnecessary technical phraseology which makes it readily understandable by anyone of ordinary intelligence. It begins with a general description of what typhoid fever is; then discusses the bacteriology of typhoid fever, stating the latest knowledge and theories concerning the methods by which it is carried from patient to victim and the precautions which can be taken by the community, the family and individual against the disease. The matter of typhoid statistics is discussed in a rational way, attention being called to the conditions which make to inaccuracy in such statistics. An exceptionally complete description of typhoid fever epidemics during the last ten years occupies 31 pages. The author finally discusses the influences of public water supplies on the typhoid fever death rates of cities, and that of the milk supplies, and discusses the financial aspect. Appendices sixteen in number occupy about 110 pages, these discussing, among other things, the use of disinfectants, house flies, the estimation of population, bacteriology of the blood, examination of water for *B. typhi*, typhoid fever in U. S. Army camps, the bibliography of articles concerning typhoid appearing in periodicals during the past few years, and a number of tables of typhoid statistics.

Altogether the work is an excellent one and should serve quite fully the purpose of any but the specialist.

Bacteriological Examination of Water Supplies. By William G. Savage. Philadelphia: Blakiston's Son & Company. Cloth, 8 vo., pages 291. Price, \$2.50 net.

The author of the work is a resident of England, Medical Officer of Health at Colchester and Lecturer at the University Colleges of Cardiff and London. His intention in this book has been to demonstrate established facts only, the subject being considered from the standpoint of the critic, without advancing any dogmatic opinions of the author. As indicated by the title, bacteria are considered only in respect to their being polluters of water; although highly polluted water such as sewage is included. Particular attention, of course, is paid to the bacillus coli and the intestinal bacteria; to bacteria as indicators of pollution and to the classification of such bacteria as are considered in this connection. The interpretation of results is treated from the modern standpoint, it being conceded that fixed arbitrary standards of purity are useless or impossible. Instructions for the collection and transmission of samples and for making quantitative examination, the identification of specific organisms, etc., occupy the second part of the work. Not the least valuable pages are the thirteen devoted to recent bibliography, in which are listed several hundred articles, mostly from English, American and German periodicals.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

It is our purpose to give in the first issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The Index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the Index for the price named after each article; except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS

Road Improvement in the West and Northwest. Illustrated, 13 pp., Good Roads, July, 10 cts.

Road Maintenance and Improvement. Toll-Gates the Ultimate Solution. 1-2 p., Surveyor, July 9, 20 cts.

Widths of Country Roads and City Streets, Unnecessary. From report of R. J. Thompson, U. S. Consul, Hanover, Germany; with comments. 3-4 p., Engineering News, July 22, 15 cts.

Highway Engineering in Schools and Colleges. Paper before Society for the Promotion of Engineering Education. 1 p., Engineering Contracting, July 21, 10 cts.

Statistics Regarding Roads, Collection of. Papers before Road Conference. By Seymour Williams and G. M. Harris. 1 pp., Surveyor, July 2, 20 cts.

Road Signs. Paper before Road Conference. By A. A. Davis. 11-2 pp., Surveyor, July 16, 20 cts.

Danger Signs for Roads. Paper before Road Conference. By C. W. S. Crawley. 1 p., Surveyor, July 16, 20 cts.

Experimental Road in Ohio. 1-4 p., Municipal Journal and Engineer, July 28, 10 cts.

Automobile and the Road. From report of Connecticut Highway Commissioner. By J. H. McDonald. 11-2 pp., Good Roads, July, 10 cts.

An Accelerated Test of Road Wear by Automobile Traffic. Illustrated, 1 p., Engineering News, July 8, 15 cts.

Concerning the Wear of Roads by Automobiles. Illustrated, 2-3 p., Engineering News, July 8, 15 cts.

Dust Laying Experiments with Tar and Chemicals. By T. H. Yabblcom. Paper

before County Councils Association. 11-2 pp., Engineering-Contracting, July 7, 10 cts.

Cost of Laying Dust with Oil in Toronto. By Chas. Sheard. 2-3 p., Canadian Engineer, July 16, 15 cts.

Bitumens and Their Use in Paving and Road Making. 2 pp., Good Roads, July, 10 cts.

Methods of Examination of Bituminous Materials for Road Construction. Paper before American Society for Testing Materials. By Clifford Richardson and C. M. Forrest. 11-3 pp., Engineering-Contracting, July 14, 10 cts. 3 pp., Municipal Engineering, July, 25 cts. 1 p., Engineering Record, July 10, 10 cts.

Tarring Roads in Norristown, Pa. 1-3 p., Municipal Journal and Engineer, July 7, 10 cts.

Tar and Its Uses in Modern Road Construction. Paper before first American Congress of Road Builders. By E. P. Hooley. 1 p., Pacific Builder and Engineer, July 17, 15 cts.

Materials for Tarring Macadam Roads. 12-3 p., Municipal Engineering, July, 25 cts.

Effect of Free Carbon in Tars from the Standpoint of Road Treatment. Paper before American Society for Testing Materials. By Prevost Hubbard. 21-2 pp., Engineering Contracting, July 14, 10 cts.

Asphalt Macadam Roadways. Paper before First American Congress of Road Builders. By Clifford Richardson. 1 p., Pacific Builder and Engineer, July 17, 15 cts.

Paving Brick, Rattler Test for. 2-3 p., Engineering Record, July 17, 10 cts. From Bulletin of Illinois Geological Survey. By A. M. Talbot. 5 pp., Municipal Engineering, July, 25 cts.

Methods of Constructing Brick Paved County Roads in Muskingum County, Ohio. Illustrated, 1 p., Engineering-Contracting, July 7, 10 cts.

Construction and Manufacture of Vitrified Brick. Paper before First American Congress of Road Builders. By G. W. Kummer. Illustrated, 3 pp., Pacific Builder and Engineer, July 17, 15 cts.

Wood Paving. By William Weaver. 1 p., Surveyor, July 2, 20 cts.

Notes on Wood Block Paving. By M. B. Bennett. Illustrated, 31-2 pp., Surveyor, July 16, 20 cts.

Grade Separation. By F. L. Somerville. 21-2 pp., Canadian Engineer, July 2; 1 p., July 9, 15 cts.

Data Relating to Street Lines and Grades, Method of Keeping. By H. A. Varney. Illustrated, 1 p., Engineering News, July 8, 15 cts.

Culverts, Street. Methods of Constructing. 1-3 p., Municipal Journal and Engineer, July 7, 10 cts.

Numbering in Chicago, New System of. 1-2 p., Construction News, July 17, 10 cts.

SEWERAGE AND SANITATION

Storm Water Flow and the Required Capacity of Storm Water Conduits. New Method of Estimating. Extracted from paper before American Society of Civil Engineers. By C. E. Grunsky. 9 pp., Engineering-Contracting, July 21, 10 cts.

Sanitary District of Chicago, and the Chicago Drainage Canal. By Isham Randolph. Illustrated, 5 pp., Engineering News, July 22, 15 cts.

Sewer Construction in Clinton, Iowa. Methods of. From paper before Iowa So-